GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

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STRAY STRAWS FROM DR. C. C. MILLER.

HAPPY new-year!

THE WAR IS ON in *Progressive* between the five-banders and the anti-five-banders.

OHIO OFFICERS, I see by the papers, are looking up syrups bleached by zinc poison.

THE HAINAUT Bee-keepers' Association, Belgium, numbers more than 2000 members.

FOUNDATION-MACHINES are getting it down pretty fine to make a septum $\frac{54}{10000}$ of an inch thick. That's 185 thicknesses to the inch.

WOOD SEPARATORS, if loose; tin, if nailed, has been my rule; but perhaps it will be all right to nail wood if only one nail is put in each end.

M. M. BALDRIDGE, St. Charles, Ill., is getting out some interesting bulletins concerning sweet clover, compiled from government reports and other reliable sources.

THE RAKING or scrubbing motion of bees in front of the hive is only for amusement, according to S. E. Miller in *Progressive*. Why not? Or for exercise?

"SYRUPS that have been adulterated with glucose, and preserves that have been sweetened therewith, become a menace to health."—Dr. Eccles, in *N. Y. Med. Journal*.

LATHYRIS SILVESTRIS, growing a few miles from me, was seriously if not fatally injured by the terrible drouth of last summer. Sorry. Sweet clover's the chap for drouth.

SAY, BROTHER A. I., after that performance in flesh-colored tights, described on p. 954, don't you grumble any more about the way they dressed in the St. Joe variety show. "Oh-ow!"

HASTY, in his condensed cream in *Review*, objects to using old bedclothes in percolating feeders. Wants them, "like Cæsar's wife, above suspicion and snuffin'." I am with you, Hasty.

REPORTS from Germany say large numbers of dead bees are found as a result of working on *Chelidonium majus*. Possibly some of the strange cases of mortality in this country have been caused by working on poisonous plants.

FROM THE WAY C. A. Hatch speaks of that Russian smoker on p. 943, he would hardly approve of my first smoker. It was a preserving-kettle with a tin cover and a rubber tube. It wasn't as good as the Crane!

THE CONTROVERSY, "Ten vs. eight frames," seems changing into "ten frames in one story, vs. sixteen frames in two stories." How about compromising on fourteen frames in two stories? [Better make it 14½, eh?—ED.]

AN ARTICLE in a leading Chicago daily gravely states that dark beeswax comes from Wisconsin, where the bees work on tobacco. [Let's get that Chicago daily to settle for us that vexed question of large vs. small hives.—ED.]

DR. PAUL MARCHAL reports in *Apiculteur* that he dissected 98 workers taken from a hive of laying workers, and found among them 20 containing eggs fully developed, and a goodly number with eggs in various stages of partial development.

SUPPOSE one convention had all essays and another all discussions. Other things being equal, which convention would you attend? [I'd attend the last; but I'd go further to one having the right proportion of both. The essays of the right sort should stimulate discussion.—ED.]

WAX ADULTERATION is hardly as bad here as elsewhere. At any rate, I see mention in *Le Rucher* of a brochure of 16 pages on the principal adulterations of beeswax. [The fact is, bee-keepers of this country wouldn't have adulterated wax, even if cheaper, and none of the present American makers would furnish it.—ED.]

S. M. KEELER, in *American Bee-keeper*, recommends red lead and linseed oil to make inside corners of a feeder water-tight; and the clasps worn by wheelmen, to make your trouser-legs bee-tight. [I have used the clasps myself. I always use them on long pants for wheel-riding; so you see that, when I take a spin to an out-yard, my trousers are bee-tight at the minute of my arrival, and during my stay there.—ED.]

THE ABUSE of a good thing is no argument against its proper use. Like John Handel, p. 944, I've coaxed bees up into the eighth story and had all unfinished sections; but, all the same, when I'm pretty sure bees will fill a second super, I put the second one under. If doubtful about both being filled I put the empty one over.

"FOR MANY YEARS I have warned bee-keepers to watch the sudden checks in honey-flows when colonies had large quantities of larvæ on hand, and to feed, no matter how much old sealed honey the bees might have at the time, because brood is never as well fed as when there is plenty of *unsealed* honey in the brood-chambers."—Wm. McEvoy, in *C. B. J.*

NOW WE KNOW the object of those long essays. It was to get the papers of St. Joe to print them, as they would print them and wouldn't print discussions. Bro. Abbott, St. Joe papers can get points from our Marengo papers. A horticultural convention was held here lately, and a report of four columns gave the discussions while not an essay was printed, although some good ones were read. But then, our editors have lots of judgment and enterprise.

"HUSBAND AND WIFE should kiss each other, but not on the street-corners, as a general thing," quoth Hasty in *Review*. What business has an old bachelor putting restrictions on the kissing of man and wife? Besides, if he were experienced in that sort of thing he'd know it was a good deal nicer to kiss them on the lips. [You'll have Dr. Peiro after you if you don't look out. He objects to the "lip" part of the job, and he's no bachelor either. —ED.]

IT TURNS OUT that Doolittle, the champion of brace and burr combs, has been for years using such top-bars and spaces as keep him almost free of the nuisances. He says, in *A. B. J.*, "With such frames and bee-spaces it is a rare thing that any honey is ever stored between the sections and tops of frames, while not to exceed from 5 to 15 brace or burr combs are found jutting above the tops of the frames." If we all get down to 5 or 15 bits of dry wax we'll do not so badly. [So Doolittle is an anti-brace-comb man after all, in practice.—ED.]

THIRTY THOUSAND, or, to be more exact, 30,067, is the number of members of the German Central Association for Bee Culture and its branches. I think no bee-keepers' society in this country is so large. [These figures look tremendous when we in our country can not get up a membership of over 100, and that, too, for an association that is somewhat international in character, in the best bee country in the world. Of course, we have great geographical distances to contend with; but this can not account for such a difference. I should like to *know* how the Germans manage to secure so large a membership; the conditions of membership, and the privileges.—ED.]

BEE-ESCAPE.

THE PHILOSOPHY OF THE WORKING OF THE STAMPEDE ESCAPE.

By C. W. Dayton.

Editor Gleanings:—It is admitted (I refer to page 870) that the Stampede escape resembles the original "flood-gate" Pouder, and the "going-toward-the light" Boardman, as closely as if devised by a theorist who had never possessed a colony of bees. Still, by the method of procedure the Stampede might possibly have been produced had neither of these escapes been in existence.

I used escapes very much as toys or curiosities until the season of 1892, when I engaged with Mr. Charles Adams, of Colorado, where about five dozen Porter escapes were to be utilized in our regular work. The following winter there came a discussion of escapes in the *Review*, and it was claimed that an exit which admitted only one bee at a time was as good as a larger exit. It was suggested by the writer that something was lacking in the present forms of escapes, because, when they were in use there was a clicking and crackling sound to be heard; and after removing the cleared super the escape-board was nearly always found strewn with slivers, and the joints were rounded by the gnawings of the confined bees. Mr. Aikin's experience agreed with this, and he said that what was needed was a large window to show the bees the way. I waited confidently for some one to provide the escape which should eliminate these supposed troubles.

In using escapes during 1893 the crackling was still present, the joints of hives and supers were being rounded, and as the supers were raised the bees sprang into the open space as if to get fresh air, but very few took wing. These actions indicated that a way of departure was desired, though they were not in haste to depart by it. Again, where hives had too small entrances, this crackling sound had been noticed to proceed from the neighborhood of crevices between supers and covers. When the entrances were enlarged, the crackling all ceased. Entrances which were large enough for colonies while weak, were too small after the colony became stronger. Bees had been observed trying to enlarge, not alone the usual entrance, but also every visible crevice about their hive. Although the enlargement of all the crevices is not in accordance with reason, we find that the nature of bees impels them to the removal of a

mountain with as much vigor as in sweeping away the loose dirt which a mole may have thrown upon their doorsill.

Several escapes and supers were prepared so that it could be seen how the bees performed. It was noticed that the first one or two hundred bees proceeded almost directly to the joints, and began pulling at the corners without much search for the escape-exit. These bees seem to bear about the same relation to the general throng as the sentinels in a colony or the leaders in a swarm. A single-exit Porter escape had the rear part of the channel removed, and then it was adjusted on the top of the escape-board with its mouth projecting through the side of the super, to allow light to shine through the escape and be distributed over the surface of the board. Loud crackling ceased entirely. Still, very few bees came out through the escape during the first hour. A Porter escape was thus arranged for the outside air and light, and then another by the side of it, in the usual way, leading down into the brood-nest, and four-fifths of the bees went out of the super by the inside rather than by the outside route. Why should they *not* choose the shortest way?

Another modification of the Porter escape was devised, containing a long flexible spring for a bee to walk upon, and which should sag and open the exit, allowing the bee to escape without effort. In testing it by the side of the usual exit, 95 to 98 out of 100 bees passed out of the exit, which required no exertion. One hundred bees were placed in a box with the exits side by side. When the bees were quietly caged they remained unalarmed for considerable time. When the exits were closed until they became uneasy, the difference in operation of the exits was much nearer alike, owing to one bee first spreading the springs and then several others rushing and following closely after. It requires a fresh quota of bees at each trial, because the natural disposition of the bees is the subject of test.

An easy exit would assist slight inclinations, and a single-bee exit is inadequate for practical use, as an hour or so after the escape-board is put on the hive, the festoons begin to break up; and I have seen bees crowd through a single-exit Porter escape, pressing the springs apart the full width of the channel. The wider the springs are opened, the more power is required. This fact suggested the change to laterally swinging gates, which might be maintained open full width as easily as part way, after the manner of the "garden gate," which swings by its own weight upon a narrow hinge at the top and a hinge of wider sweep for the bottom. Then it was noticed that robbers, in trying to creep into perpendicular crevices, approached from the sides, showing that the natural mode was to place their heads under and lift, instead of pushing against the points of the shoulders, as would be necessary in the operation of lateral gates and springs. Therefore the Pouder was the correct form of gate. The force of the Pouder invention was destroyed by the advice to "let the points of the pins rest upon the jumping-off board," when they should have remained up far enough to nearly admit a bee. This gate, constructed of heavy tin and, properly adjusted, clears the supers right along; but with the front edge of the heavy gate resting upon the "jumping-off" board, it is of no use whatever. I made it first of tin, using it so one season; then platinum, and finally of wire, to admit a better flow of light. I believe the "partially open" idea was first suggested and applied to escapes by the Porters.

In my opinion, the first bees to leave the combs and come down on the escape-board are not dispositioned to leave the apartment until the whole "crowd" goes. They search for a route of escape, and, finding none which *suits* them, they attempt to prepare one by pulling away at the yielding points. If a satisfactory exit is there, they recognize the escape-board as a strange piece of furniture, and spend the waiting-hour examining each other for detection of a possible stranger. About the time the bees were expected to be moving through the gate of the Stampede escape, the space between the gate and screened window was discovered to be packed full of bees, there being several upon the upper and brood-nest side of the gate, clawing and pulling for dear life to gain admittance from the hive into the super. Certainly it would take a muscular bee to lift this gate while several bees were trying, with weight and strength, to hold it down, and the roof of the channel at their backs. At first they were thought to be bees from the brood-chamber coming up, and it looked like an insurmountable obstacle. Then it was wondered why they were so anxious, having no knowledge of what would be found on getting through the gate. Finally it was discovered that these were bees of the super, which had inadvertently gone under the gates and then decided that they must return or be for ever separated from their sisters. When the general tumult or stampede began, the tide turned the other direction.

As evidence of the stampeding disposition of bees, I will relate: A strong colony was prepared for queen-rearing by removing the upper story and setting the same on the old stand, while the lower story containing the brood and queen was carried to a distant stand. In the morning it was intended to add more bees and give eggs for cell-building to the queenless half. This division was made near dusk, and about two hours later I heard a loud roaring in the apiary. On going out I found the bees of this queenless half pouring out and marching off across the grass and entering a strange hive about three feet away. Both hives were black with fanning bees, and the trail of march was at least fifteen inches wide. This was the

greatest demonstration over the loss of a queen that I ever saw. Yet was it not the exact result produced by the adjusting of an escape-board between the two stories? And what of the efficacy of the one-bee-at-a-time exit?

Mrs. Atchley wrote some time ago, that, while some colonies would mourn greatly over the loss of the queen, there were others which mourn scarcely any. There is as much difference in colonies in leaving the supers or going through escapes, and it is advantageous to assist those which are slow to mourn and move, by the application of carbolized cloths. That form of escape which clears the supers in the shortest length of time is not correspondingly the most desirable for use. For example, a large amount of smoke will soon drive bees from one super into another, but a lesser amount of smoke, and slower traveling, may leave them in better condition to resume work in the new super. An escape does not smoke; but a one-bee exit may waste their thronging tendency, or the air of the super may become so heated as to injure the health of the bees. Such fear of suffocation clears a super more thoroughly, because, in going out by the natural impulse, there is a number of bees which linger, as guards of the combs of honey. The getting of the *main force* of bees below *contentedly at work* in the new super is *the* practical consideration.

Florence, Cal., Dec. 1.

[I have read over the foregoing with more than ordinary interest. While Mr. Dayton has written other good articles on this subject, this one, it seems to me, is the most comprehensive from his pen so far, and comes the nearest to hitting the real secret upon which bee escapes do their work.

Yes, I will admit that the Stampede (in fact, I assumed as much in my answer on page 870) might have been produced without the knowledge of either of the other two inventions.

Although Mr. Dayton seems to have covered the ground very fully, I wish we might have corroborative testimony from others.—ED.]

COVERS FOR HIVES.

THE HIGGINSVILLE AND GABLE DISCUSSED

By Dr. C. C. Miller.

Early in November we had a fall of snow, and, unfortunately, my hives were not yet in the cellar, so each one had a covering of snow some three inches thick. In a day or so there was a sort of basin of snow on each hive. On the middle part of the hive-cover the snow was entirely gone, while at the outer edge there remained a border of snow three inches deep. There was some comfort in the thought that the colonies were strong enough so that the heat from them melted the snow. Of course, the heat would be greatest at the middle part, directly over the cluster, while at the outer part there was not enough heat to melt the snow. But there was discomfort in the thought that whatever heat came up to melt the snow was heat taken from the bees, and there was no resisting the thought that they would have been better off if that heat had been retained.

While the single-board flat cover has so many advantages that I hardly think I shall ever be willing to go back to the covers I formerly had, still there is no denying the real disadvantages in the flat cover. First, it is cold; second, it warps and twists so that it doesn't make a close fit. Before I had flat covers, if a hive stood out with snow over it, that snow melted away very little faster than the snow on the ground. A quilt or cushion was over the frames, then a space of from one to six inches between that and the cover, so that practically there was a non-conductor over the bees.

Admitting that, when snow is on the hives, it is to some extent bad to have a single board over the bees, the question arises whether that matters particularly when no snow is on them, as when in the cellar or under a shed, or even when a board is laid over the cover. Is it any worse to have a single board on top than at the sides and ends of the hive?

When my hives are in the cellar I have sometimes looked in at the entrance, holding a light there, and I could plainly see water standing in drops on the back wall of the hive. If water is on the back wall, I see no reason why it will not at the same time be on all four walls and also on the cover. Is it any worse for it to be on the cover than on the walls? I can hardly see that water standing on the cover is any worse than water standing on the walls. But when it accumulates to such an extent that it no longer will stand there, then there is a decided difference. The water on the walls trickles down to the bottom, while the water on the cover falls in large drops on the combs and on the cluster

So it rather looks as if we wanted matters so arranged that no moisture will condense over the bees, whether in cellar or out. Outdoors, with the right covering to favor it, a thick coating of frost will accumulate on the cover, thicker than on the side walls; for the tendency of the heated moisture is to rise; then when the weather moderates sufficiently, down comes a deluge on the combs and bees.

Taking in view what I have said, C. F. Muth seems quite reasonable in his contention that the only protection he wants for his bees in winter is on top. And isn't it just possible that the great advantage claimed in some cases for absorbent cushions over the bees lay not in the fact that the materials used were good absorbents, but that they were poor conductors of heat, hence materials that would not become cold enough for moisture to condense upon?

The other trouble with the flat cover is a bad one for both winter and summer. Some seem to think that, with a cleat on each end of the

cover, it will stay straight. But a board can twist, no matter if an iron cleat be immovably fixed on each end, and with any ordinary cleat there is likely to be some turning up at the sides. The Higginsville cover is an improvement in two directions. It is not likely to twist, for the two pieces will seldom if ever agree to twist together. The edges are not likely to curl up, for the cover is thinned down at its edges, and, being thinner, is more easily held in place.

But the Higginsville cover still has the objection of the single board so far as warmth is concerned. And now I have a confession to make. Until after I had written the preceding paragraph I had not read carefully enough the description of the "ventilated gable" cover on page 911 to notice that a flat board fitted directly down upon the hive. Indeed, I had not noticed that there was any thing about the cover that was especially different from covers already in use. After reading carefully the description, and after looking at the picture for some time, and thinking it over closely, I confess it's a good cover — in some respects, better than any thing else I've ever seen.

But the advantages of the Higginsville cover I'm hardly willing to give up. With that I can carry my hives into the cellar and pile them up four or five high. How could I do that with the gable cover? That one item condemns the gable cover for my use. For those who leave hives on the summer stand, there may not be the same objection. But a large number — a number that I think is on the increase — winter in cellar, and the question arises whether you can not combine the advantages of the two covers.

For perhaps more than a year — at least ever since I first saw the Higginsville cover — I've had in mind a cover much like the Higginsville, only having a thin board or boards nailed on the under side, leaving a half-inch space between the upper and under cover. I suspect that that half inch space would be about as good as a space of several inches. That would leave a cover that would take little room (you see, the room taken up by the gable cover would be decidedly objectionable in the cellar, even if it could be piled), and it would pile up as easily as any flat cover.

While I don't feel sure about it, I don't think I want any ventilating space between the two parts of the cover. In mild climates I should think it a good thing, and possibly it may be best anywhere; but it seems to me we don't want any thing but a dead-air space so as to keep it warmer. But it would be a mere trifle to put in a strip on each side to close the ventilation.

Another item I don't like, and after using it I like it less; viz., the cleat projecting below the under surface of the cover. It hinders rapid placing of the covers on the hives; and if cleats are put on the ends of hives for handles, the covers must be made about two inches longer. I agree with H. R. Boardman, that cleats for handles are indispensable, and the cover must conform. It will be an easy matter to nail the thin board under the Higginsville cover, leaving a perfectly flat surface to fit on the hive. That done, and the space made a "dead-air" space, I think my ideal of a cover would be reached.

I don't think I shall ever again get a new cover made of a single board, nor one made of two boards with the joint closed by a piece of tin folded and slid into saw-kerfs. Some of these days, if I live, I shall want some new covers. I want them to fit down close, so there shall be no crack between cover and hive, or between cover and super, and I think either of the covers on page 911 will fill the bill in that direction. I want the advantage of the air-space, and I want at the same time the advantage of the flat cover. What do you think of my ideal?

Marengo, Ill.

[Regarding C. F. Muth's contention that the only protection he wants for his bees on top, I might say he may be all right for his locality; but it would be hardly enough in our climate, or where it is colder, as in Marengo and in many parts of Canada. I remember one time when we were going to the Bee-keepers' Congress in New Orleans (February, 1885) we left Medina in the morning when the thermometer registered 10° below zero, and had been at that point for about a week. Snow was on the ground to a considerable depth. Well, in about four hours the train brought us to Cincinnati. There was very little snow there, and what there was to be seen was melting; and I was told that the thermometer had hardly been down to freezing for a week. Now, this is a difference in temperature that is often found between the northern part of even one State and the southern; so it will be apparent, I think, that top protection would not be enough for the northern part of the State, while it might answer for the southern part very well.

Our ventilating cover was made for hot climates, and to take the place of the 20-lb. stone and shade-board in other climates. The two open side spaces can easily be closed up with two narrow strips, and we shall then have, practically, a cover with a dead-air space.

You id a of making the Higginsville cover double is good, and it is very possible that we ought to hold ourselves in position to furnish the trade such a style whenever they call for it. But I would insist that the lower cover-boards be let into a groove, for I would never trust nails alone to hold the boards. And that brings us to the question as to whether we shall let the cleats project down on the under side. A good deal depends upon what sort of cover one is used to. Here at the Home of the Honey-bees we have used the flat covers with a cleat projecting over at each end, and would not have them any other way. You will remember that the sides of the hives are ⅞ thick at the top. The ends at the top, by reason of the rabbets, are only ¾. The cleats of the cover project down and protect this ⅜ — that is, they prevent the water from beating or seeping in. Another thing, the down-projecting cleats permit of grooves that will hold the boards securely. To make the covers entirely flat on the under side makes the groove a rabbet, and then nails have to do the whole work of holding the boards.

Yes, sir; there is a good deal in getting used to a thing. If you can get used to the cleats projecting downward, and can be convinced that they make a better and stronger cover, then why not get used to an arrangement that may appear to be a little awkward at *first?*

Yes, I know you prefer cleats nailed on to the hives in lieu of handholes; but here again is the old saw, "getting used to a thing." The handholes for the last year are not the small scrimpy things that they once were. They are made wider and deeper; and I do not know but they can be made wider yet, so as to give the same handhole grip, practically, that you obtain from the hive-cleat, without its awkwardness.—ED.]

HIVE-COVERS.

THE TORONTO CONVENTION AND HONEY-BEE CONCERT.

By F. A. Gemmill.

There are two items of particular interest to me in GLEANINGS for Dec. 1 that I desire to call attention to. As, however, I do not wish to write a long article on either one of them, I will endeavor to be brief and give them in the order as per the above heading. First of all is the illustrated gable ventilated hive-cover and your comments thereon. I fully agree with you respecting the "20-pounder," as I have used it, as well as the shade-board. I do not, however, use a quilt in summer when producing comb honey, and seldom for any purpose except when feeding small quantities of thin syrup or honey for stimulative purposes between fruit-bloom and clover, and for winter covering under the packing. The latter plan I am to some extent discarding, finding them not an actual necessity when the other conditions are satisfactory; and as for enamel cloths, I never used even a single one for experiment. My flat wooden covers all have the requisite bee-space under them; consequently, for the reasons you advance, the quilts are not at all necessary, whether or not producing comb or extracted honey. I have, therefore, concluded to give the new covers a trial, in the hope that some labor and time may be saved, without altogether sacrificing the needed protection from the hot sun, etc.

THE TORONTO CONVENTION.

Like Mr. McKnight, I am also glad that Toronto has been chosen as the next place of meeting of the International convention; and as that gentleman has given your readers his views so well, it is needless for me to attempt to add any thing more in this direction. I trust, notwithstanding this, that Americans or Canadians (Yankees or Canucks), will be carried away with the idea that no other convention of importance is to be held in Canada during the coming year of 1895, as the Ontario Bee-keepers' Association is to meet in my city (Stratford), Jan. 22, 23, 24; and although we have had some excellent meetings of this association in Canada, we expect the coming one to eclipse all former ones. If it does not do so it will be a disappointment to those who have the matter in hand.

For the benefit of those who desire to attend, I may say that our railway facilities are unsurpassed by any other point in Ontario. Numerous trains arrive daily from the east, west, north, and south; and for a city of its size the hotel accommodation can not be excelled. The court-house, for holding the regular sessions, is not only commodious but central as well. Having stated this much, I want specially to bring before the notice of the readers of GLEANINGS that a new departure is going to be attempted, which, I am quite satisfied, will be an improvement; and as it may possibly be looked upon by some as one of my hobbies, I am the more eager that it be successfully carried out on this occasion, as several attempts at my request, in other places, did not meet my anticipations. As a natural consequence, I am in hearty coöperation with a few others in endeavoring to see my scheme materialize. It is, in fact, nothing short of a public entertainment to be held on one of the evenings, while the association is convened in this city, for the special benefit of the public, so that they may be educated or instructed in regard to the value of honey as a food, accompanied with a magic-lantern exposé, and lecture on the anatomy of the honey-bee, illustrating at the same time the manner in which the insects fertilize the flowers, secrete wax, build comb, gather and ripen honey, etc., interspersed with both vocal and instrumental music suitable for such an occasion.

We Canadians are not going to be behind the times; and as Dr. Miller on one occasion in Stray Straws referred to "a man up in Canada" as advocating a honey-bee concert, we want him up here to see how we do things, and then he will know all about it, and can do likewise; but then, he is not going to be allowed to do or say any thing except "I don't know nothing," or something like that. But in case he might be offended, I'll show him *up* in my apiary, as I have his name painted on a bee-hive, in good company with some prominent German, French, American, and Canadian apiarists, who, I guess, will "kinder" smooth him over, and he will then feel at home, even if among good "basswood" honey-producers. Of course, it is generally conceded by Canadians that, in the matter of basswood hams and wooden nutmegs, the Americans, or, if you please, the citizens of the United States, take the cake.

Stratford, Ont., Dec. 11.

[Your scheme for the next Toronto convention is an excellent one, and we shall be glad to boost and boom it in GLEANINGS, in every way possible. Our conventions might do us vastly more good if we would make them more a

medium for conveying knowledge to the general public of how the "bees make honey," and that it can be produced by the car and train load, and every drop of it be pure honey. The magic-lantern exhibition would help wonderfully. Then while we are about it, let us not forget to get the newspapers all over the land to give full reports. Without any thought of flattery, I believe I am safe in saying the bee-keepers of Ontario will do more along these lines than those in any one State of our Union. —Ed.]

ONE POINT IN WHICH THE FLAT COVER IS SUPERIOR TO THE HIGGINSVILLE.

Allow me to suggest one point in which the *flat* cover is superior to the *Higginsville*. When I first saw the flat cover with grooved cleats I took a strong fancy to it because it was so plain, simple, and perfectly *reversible*. For 15 years I have had experience (generally unpleasant) with an almost endless variety of covers. I have yet to see one that will not warp. With the *flat* cover to remedy this condition, you have simply to turn it over. Please answer me one question: Is not the Higginsville a *cheaper* cover? C. A. Montague.

Sang Run, Md., Dec. 15.

[Nearly all our flat covers in use have been reversed at some time, as the propolis-marks show, but the reversing was accidental rather than for a purpose; but a single-board cover, if it has any tendency to warp at all, warps, or tries to, so far as the cleats will permit, all one way. Much will depend upon how far the board was from the heart of the tree. The Higginsville model, besides the cleats and gable strip, is made up of *two* boards; and theory as well as practice shows that the warping tendency of the one will correct that of the other. But another important point is, that the outside edges of the boards are brought to a thinner edge, and this weakens the curving tendency so that the cleats will be able to hold them.

No, the Higginsville cover is not cheaper for the eight-frame hive. It would be for the twelve-frame size, because wide boards for such a size would be expensive.—Ed.]

RAMBLE 123.

IN THE SALINAS VALLEY.

By Rambler.

We made our quiet entry into the town of Paso Robles on the 19th of July. They never have any hot weather in Paso Robles; but the day we entered, and the next day, which we passed there to give our lame pony a rest, and to wait for our mail, the thermometer registered 96° in the shade. We perspired a little, though we were camped under one of the oaks near the great hotel. The hot sulphur springs make the town noted; and many who are afflicted with disease come here in quest of health. Three miles from town is the Santa Ysabel sulphur lake, where open-air bathing, mud baths, and boating, are indulged in. These attractions, and the beautiful drives around the country, bring not only invalids but tourists to town, and it has on the whole quite a prosperous air. From Paso Robles to San Miguel (St. Michael) would ordinarily be but a two hours' drive; but with our lame pony we were half a day getting there; and while our ponies were eating their allowance I strolled over to the Old Mission, which is located here, and photographed it from various points. Much of it is in ruins. A kind padre, however, has it in charge, and is willing to receive the little stipend the visitor is willing to offer. In fact, there is a notice on the door, saying that a two-bit piece dropped into the slot would be a welcome visitor. There was not a very prosperous air around San Miguel. The country was parched to such a degree of dryness that no crops had been secured; and the few people loitering around the streets had a discouraged aspect. I learned, from what I considered a reliable source, that there were two extensive bee-keepers near San Miguel. After diligent inquiries at the stores, the livery stable, and of our friend the blacksmith, I could learn nothing of Messrs. Swenson or Littlejohn, and concluded they were either a myth or had dried up with the rest of the country. I did learn there was a Ward bee-ranch out a few miles on the road we were to travel. Our afternoon journey carried us past it, and we did indeed find the Ward apiary, dried up and partly blown away, or, at least, it was the nearest approach to a deserted bee-ranch that we had seen for many days. Mr. Wilder and I came to the conclusion that our informant must have been in error, and that there were no bee-keepers in that dry country, any way. For over fifty miles we saw not a flower for a bee to work upon, and not a bee to work upon a flower.

Our drive for a couple of days was monotonous enough, and our camps windy and dusty. Saturday evening, July 21, we were glad to encamp on clean grass-covered ground, upon the banks of the San Antonio Creek. We camped, and rested over Sunday, and scraped the dust from our bodies in the crystal waters. The weather was so fine, and trees so protective, we dispensed with the tent and slept in the open air. Monday morning found us much refreshed for the continuation of our journey. Reina's lameness began to mend a little, so that we could indulge in a trot occasionally. On the creek-bottom we found a few plants which looked like what we used to call, back east, "queen of the meadow," and there we found a few bees at work.

Just as we entered the road, for the pursuance of our journey, a lone horseman came along, and, like all sociable travelers, we fell into conversation, and found that our horseman was an ex-cowboy from Nevada; had just come from a prospecting-tour on the Mojave Desert; had earned some money recently, in the capacity of a vaquero, but had "blown it in," as he termed it, in Bakersfield; was now on his way to Monterey to secure a job on the new railroad; was about dead broke, and would like

to travel along with us. We, of course, had no objections, and the ex-vaquero became an attachment to our outfit, or a sort of tail to our

OUR VAQUERO OUTRIDER.

kite. His horse was not a fiery steed, but he was honest; his ears seemed to have been broken down some time at the base, and had the habit of flopping up and down like a saturated dish-cloth. Our vaquero, too, held his bridle hand high, and allowed the motion of his hand to keep time with the horse's ears. On the whole, our vaquero was a young man of many accomplishments; and around our campfire evenings he gave us much information in relation to life on the plains.

Near Jolon (*Jo*-lone) we crossed the line into Monterey Co., and now, after several days' drive over a dry and dusty country, we enter the mountains and cross over into the Salinas River country. The change is agreeable; and Mr. Wilder, finding signs of deer, rode for several miles with rifle in hand, ready for execution upon whatever animal might appear.

WILDER SCENTS DEER; A GAME CALF.

At the foot of the grade, just as we were about to strike into a more level country, a deer arose and looked at us from under the drooping foliage of an oak-tree. Wilder fired, of course, and the deer gave a sort of scrooch, as though hit, and then took an easy trot and disappeared in the bushes. This was the first wild deer I had ever beheld. From Mr. Wilder's stories about deer, I had my imagination all wrought up, expecting that, when I saw a deer, it would go bounding away o'er the hills, with head, tail, and horns erect—an imposing sight; but this deer just stood and looked at us like an old cow, or until it was shot at, then moved off. Why, I have seen a two-months-old calf show much more of a gamy spirit than that. Just try to lead a stall-fed calf of the above age out to the pasture-lot, with a long rope, and if you don't find gamy qualities that will throw this lone deer into the shade, then I am no judge of animal nature.

Hearing the firing, our vaquero, who was in the rear, came dashing ahead, and rendered us good service in scouring the brush; in fact, all three of us scoured, but in vain. No deer could be found. Bro. Wilder said that a deer would sometimes carry a bullet a long distance, even if shot in a vital spot. I told him I had a fair view of the deer, and I was sure *we* hit it in the shoulder. When I said *we*, Mr. Wilder turned right off into the bushes again, and went to scouring; and again we all scoured. We didn't wish to lose that deer that *we* were sure *we* had hit. But we had to pursue our journey again, and Wilder and I didn't get over *our* bad shot at that deer for three whole days. We got out of the deer country, and could not mend matters by shooting another.

We saw here, at the juncture of the hills with the plains, a little apiary of half a dozen hives. They were set up against a fence—box hives—in squalid misery, and we thought it not worth while to interview the owner. It demonstrated, however, that there was a little portion of the country that could support bees.

We now entered a strip of country, the reputation of which we had heard of for many miles. Even before we left our southland we learned that we should find the windiest place we ever experienced when we entered the Salinas Valley. The contour of the mountain-ranges, and the valley's pointing toward the Mojave Desert, cause the wind-currents from the ocean to follow the strong tendency to fill a vacuum on the desert, caused by so much heated air rapidly rising. The air-currents reach their greatest force near King City, in the upper portion of the Salinas Valley. We found the windy stories verified; and for eight miles we faced wind, dust, and gravel stones—yes, sir! small gravel stones were hurled through the air, and were any thing but pleasant to strike the eye. Our vaquero, riding doubled up on his horse, was out of sight half of the time in the clouds of whirling dust, and even our ponies we beheld as through a mist much of the time. Teams approaching us were almost upon us before being discernible; our eyes were full of dust, and we shed tears of mud. It was a drying wind, too, and several times we all drew up

on the lee and shady side of a telegraph-pole and drank from our canteen.

We entered the country of large ranches, few and far-between houses, and few camping-places. However, we sent our vaquero ahead when we approached the next ranch, and secured permission to camp. Our faces, when we got where we could look at them, were nicely frescoed with dust; ears full, more tears of mud. On the whole it was an experience to be remembered. The Salinas River is here bottom side up as usual, and windmill water is used for the herds of stock. Every thing is usually free to the traveler on these large ranches; but they have a sort of deserted appearance this dry year—not so many men employed, and the cattle were being driven off to better pasturage.

The next day, as we pursued our journey we passed through a herd of 500 cattle in search of greener fields. All the way to Soledad we traversed a wind-swept road. It is hard to find, in many portions of California, people who will admit that their particular locality has any disagreeable features; but people here frankly admit that they have a very windy country. We cross the river at Soledad, and here it gets right side up, and shows a fine stream of water. From Soledad to Gonsales (Goan-*saw*-lais) the aspect of the country changes; the valley widens out, and large grain-ranches are the rule, to the exclusion of fruit. There is enough moisture here for the raising of a fair crop of grain, even in a dry year; and the warehouses were filled with sacks of grain, and piles of sacks could be seen in the fields in every direction. The people had a more hopeful expression upon their faces, and it was pleasant to see the change from the discouraged people we had seen during the past hundred miles. Our vaquero hustled for a job at every grain-ranch; and as he rode into a field where a steam-thrasher was at work he bade us good-by. The flopping ears of his steed flopped us a last farewell, and we entered the town of Salinas, and sojourned for a couple of days.

PINEAPPLES.

HOW USED; THEIR BENEFICIAL EFFECTS, ETC.

By O. O. Poppleton.

Friend Root:—Some time ago I promised to tell your readers something about the use of pineapples. They are a purely tropical fruit—that is, they can not stand any frost at all, without serious injury. For that reason their culture has never been attempted in this country on a large scale until within a few years, or since extreme South Florida has begun to be settled; and even here their culture is confined to such localities as are practically frost-proof by reason of water protection, such as we have here on the St. Lucie River and other places, or high ground, as on the Indian River, near us. By far the largest part of all pineapples raised in Florida come from the lower Indian River country, within 25 miles from where I am now writing—upward of 60,000 crates, or about 400 carloads, having been shipped this season from the East Coast of Florida.

An article descriptive of pineapple culture might be interesting to many of your readers; but it would be interesting only, and not of practical value.

At first we were not strongly impressed with the value of this fruit for common every-day use in the family; but it seems to be a fruit that grows in estimation. We are now inclined to rank it as very nearly if not quite equal to the orange as a standard all-round fruit.

There are a number of ways of using the fruit. Probably the best way, as well as the healthiest, is simply to select a well-ripened apple; peel; dig out eyes with a sharp-pointed knife, and eat it fresh out of hand, the same as we do apples. Some prefer to use salt on them, the same as we do on muskmelons.

Our favorite way is to serve as sauce at the table, exactly as we would strawberries. They make excellent pies when made exactly the same as are green-apple pies, which they resemble some in flavor, but are better. Good marmalade is also made of them. There are other ways of serving the fruit, but these are our ways. In slicing pines for use as sauce, the best way is, after they are peeled, to slice them lengthwise to the core, but not through it, about ½ inch apart; then cut similar slices around the fruit. Then cutting off the sides of the fruit leaves it all in very small pieces with little labor.

Some two or three years ago we saw an item in a paper, calling attention to the value of fresh pineapple juice in its action on tough meats. We Floridians have a corner on tough beef, so we tested the statement. Wife sprinkled a couple of tablespoonfuls of fresh juice on about 1 lb. of very tough steak, let it stand a few minutes, then cooked. The result was marvelous to us. The steak was tender and sweet, and some of it was actually cut into meal. We are told that pineapple juice is the active agent in the manufacture of beef meal, and our own experiment shows that it could be. We are also told that the juice is the best known agent for the cure of croup and diphtheria, its action on the diseased membranes being the same as on dead flesh. Fortunately, we here in Florida can not test that statement.

Of course, it is easy to test the action of any thing on articles of food before either is taken into the stomach, but not so easy afterward. Theory says the action would be somewhat alike in both cases, and experience seems to sustain that theory. We ourselves have never

tested the matter thoroughly enough to know what are the real facts; but we think we feel better, generally, when using the fruit freely. Many others think the same way.

The pastor of our church here tells me that he is troubled very much with dyspepsia, causing severe constipation. He has never yet found any thing, either medicines or food, that relieves his trouble as thoroughly as does the eating of a pineapple; and it leaves no bad effect whatever. His experience is almost identical with your own, as given in June 1st GLEANINGS, only his experience covers a year or more, instead of only a few times, as yours did.

One of our neighbors manufactures in large quantities a medicine which he calls "Pineapple Digestor." The process is a secret; but it contains considerable alcohol, and is, therefore, very different from fresh juice. I have never seen or tested the medicine. I don't believe much in alcoholic preparations anyhow; but I hear it well spoken of by some, while others think differently, as is always the case with all medicines.

Unquestionably, pineapples or their juice produces much better effect when used perfectly fresh, without boiling, cooking, fermenting, or in connection with any thing else like salt or sugar. Every departure from nature's simplest way of using the fruit injures its good effect. On the other hand, no other kind of fruit is as injurious if eaten after it has commenced to decay ever so slightly. All portions of a pineapple need to be thoroughly cut out that show the least signs of decay. I can not emphasize this point too strongly.

We have but few unsalable pineapples to work up into juice, the proportion of culls and poor fruit being much less than with oranges. Of course, there is always some fruit not as salable as the rest, and some juice could be obtained from these. It should be used fresh, unfermented, unboiled, and unsweetened; and I do not know of any method of putting such juice on the market at a low price. I know a way of preserving the juice all right, but it is more expensive than it ought to be, because it has to be bottled the same as beer is, and shipped in bottles from here. I am testing the method in a limited way this fall. If successful I will experiment still more largely next summer, with a possible view of putting fresh juice on the market; but I am afraid its having to be bottled will defeat its general use. A neighbor within a few miles of here is putting it up largely in barrels; but he preserves it by the use of large quantities of sugar, which materially injures its value for the use you wish it for. I will try to keep you posted on my success or failure in keeping it fresh, and unmixed with sugar or any thing else.

Potsdam, Fla.

NOTES OF BICYCLE TRAVEL.

AT E. FRANCE'S.

By E. R. Root.

Saturday night found me pushing my wheel up through the streets of Platteville, after dark. Not desiring to intrude myself unexpectedly on the family of E. France, I made for the best hotel. The next morning, Sunday, I inquired what church of the place the France family were in the habit of attending. I was told that it was the Methodist, and that usually one or more of them were there.

In the meantime I brushed myself up, blacked my shoes, and tried to make myself half way civilized in appearance, even if rigged in the garb of a cycler, with clothes more or less soiled by the dust of the road and perspiration of the body.

At the church I was surprised to meet as ushers the hotel clerk and proprietor. They gave me a seat, and told me that they would inform me if the France people came in; but they did not come, as I afterward learned, owing to sickness in the family. But I had the pleasure of listening to an excellent sermon.

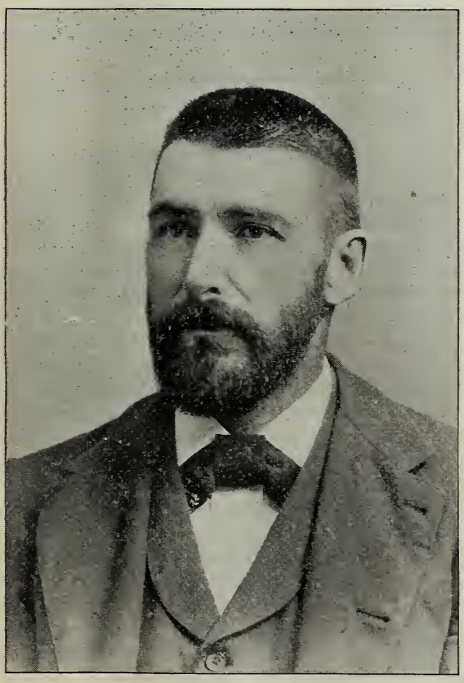
Well, after Sabbath-school I went to the hotel and wheeled thence to the France home, and was met at the door by the senior France. On explaining my identity he seemed a little surprised, and wanted to know why I did not come on my first arrival. He rather thought I ought to be "whipped" for going to a hotel; but I told him I thought it was hardly the thing for me to go unexpectedly into the homes of bee-keepers at all hours of the day and night, for, necessarily, a wheelman can not make any regular appointments.

As the senior France was not feeling very well, his son, N. E., and I took a stroll over the place. Before I go further, let me introduce you to him.

The junior France, now aged 37 years, takes care of the out-yards and manages the help generally, while his father, owing to his age (70), confines himself to the work of the home yard. Like him, the junior France is a man of intelligence and forethought, and, as nearly as I could judge, he is full of business and push. During the fall and winter, when he can not carry on active operations in the apiary and fruit-farm, he teaches school; and thus, I imagine, he finds his time pretty well taken up during nearly all of the year. He has taught thus for ten years, and this is evidence enough that his services are appreciated. He was three years president of the Southwestern Bee-keepers' Association—one that is really more active in its general work than the State Association. He was also president one year of the Platteville Horticultural Society, and has served in various capacities as secretary of these and other organizations. Like another prominent

bee-keeper (H. R. Boardman), he is a practical taxidermist, having had 18 years' experience. I am sorry that I can not tell you more about him; but he was so modest that I had to pick up what I could. But I can assure you that, like his father, he is one of the bright intelligent bee-keepers of the land; but as he has left the apicultural writings wholly to his father, less has been known of him. It is no disparagement to the senior France to say that the junior partner is now *the* active bee-keeper of the firm of E. France & Son.

You will remember that, on this same trip, I found that M. H. Hunt and R. L. Taylor were making a great success in growing fruit; but I doubt whether there are any bee-keepers who carry on fruit-growing any more extensively



N. E. FRANCE.

than E. France & Son. They not only have an extensive fruit-ranch, but they grow the very finest and nicest varieties. Every thing gave evidence of having been systematized so that the labor of the hands was reduced to a minimum, and the headwork seemed to come from both father and son, so far as I could judge, in about equal proportions.

After sampling the various fruits, Mr. France asked me if I would not like to run over to the powder-mill, that adjoined on another lot. As I expected to go away during the next forenoon I told him I would. The mills are situated in a deep valley, or gorge; and as one enters the place he sees here a building and there another, and a little further on still another. At no one point was there the appearance of a very large establishment; but an hour's walk shows that they have an immense plant—one that turns out about a carload of powder every day. I believe it is the second largest in the United States.

As I was going along one of the walks leading from one mill to another, Mr. France told me that all the employes had to wear shoes furnished by the company—that it would never do to have any steel nails in the soles as in ordinary shoes. Indeed, the rails forming the track of the small railway running from one mill to another (the car drawn by a mule) is made of copper. It is not safe to have steel or iron come in contact with itself. As I approached the door of one mill (every thing was shut down, of course) a kind of nervous fear took possession of me. I remembered that I had steel nails in my shoes, and the thought came to me, "What, what if I should blow up one of the mills with those steel nails! and how would it look to our readers to hear that I, although in good company, had been blown to atoms here on *Sunday?*" When Mr. France showed me where this mill and the other had blown up, and the terrible destruction that had followed in its wake—of the great timbers that had been reduced to kindling-wood, I felt a strong desire to get away.

Notwithstanding the great danger to the employes, and the fact that working over the powder is very destructive to health, the men keep at the business until they can do nothing else, and death soon overtakes them — not necessarily a violent one, but of slow degrees; and as soon as one is gone there are plenty of applicants for the position.

The following Monday morning I accompanied E. France and son out into the home yard, and there we talked over their methods of management. As Mr. France has himself described this in the article on page 932 so fully, I shall not need to repeat it here.

I had a great curiosity to see those great shot-tower hives. Indeed, they must have been of the appearance of shot-towers when they were made up of two stories, for the frames themselves, of the standing sort, and spaced with nails, are about 12 x 20 inches, the long way up, and about 9 of them made a brood-nest, and formerly they had an upper story on top of this, of the same capacity. You will not be surprised when I tell you that such colonies used to yield a barrel of honey; but latterly the shot-towers have all been reduced to one story; and while Mr. N. E. France still prefers them to any thing else, the senior France likes the eight-frame Langstroth better, worked in two and three stories. But whether the shot-tower or Langstroth, the hives are all of the quadruple type, to save space and to conserve heat in winter, and to render it impossible for do-

mestic animals or an ordinary wind from turning them over. They are what some people call "tenement" hives. Imagine a large double-walled hive divided up into four squares by ⅞ boards passing at right angles in the center. The outer walls are double and packed. Thus it will be seen that it is necessary to have only two outside walls, of double thickness, for each colony; and herein, I suppose, is the economy. But for some reason or other the quadruple or tenement hives are not generally popular among bee-keepers, owing, I think, largely to their non-portability.*

The Frances had discarded the old mouth smokers, such as they formerly used, and were using a modified type of the Bingham of their own construction. They had heard of the Crane, but had never seen it. When the senior France commenced to fill his smoker he said he had found that ordinary straw, packed tightly with a little tobacco, was about as good a fuel as he wanted. Indeed, the straw alone makes an excellent fuel. It makes a very dense white smoke—one that is pungent and powerful; and while we were looking over the bees, the smoker did not require replenishing, I think, any oftener than with planer-shavings or even blocks of wood. Of course, if the straw is not packed in tightly it will burn quickly.

The Frances are using principally the Carniolans. They prefer them for their own use to any others. The home yard was largely of these bees, and other yards were being Carniolanized, if I may coin the expression, as rapidly as possible.

Our Platteville bee-keepers are conservative, and not inclined to adopt any new fad except on careful and thorough trial on a limited scale; and the adoption of this race of bees by the Frances must indeed be quite a feather in the little caps of these black fellows.

We finally went into the honey-house where there were barrels, large and small; but not many of them were full of honey, owing to the short season. They find that barrels are the best packages for large amounts of honey, and, when properly coopered and cared for, afterward give but little trouble from leakage. They do not need to be waxed inside, but should become thoroughly dried, and the hoops should be driven down before filling the barrels with honey. They had had, for experiment, some large barrels made, holding 500 lbs. and over; but these were too heavy and bulky to handle. The smaller size, holding about 300 lbs., was much better. The door of the honey-house communicating with the apiary was on a level with the ground. The other door was just opposite, facing the roadway, and was just high enough so a barrel could be rolled from the floor into a wagon-box.

*A full detailed description, with drawing, of the shot-tower hives is given on page 369 of GLEANINGS for 1890.

We next looked at the France extractor, which is of the non-reversible type. The inside reel was made of wood, for lightness and stiffness, and the whole can was put in a stout frame to hold it to the proper height for easy handling, and to protect it for hauling whenever it should be necessary. The senior France said the non-reversible would extract all the honey one could get, but the junior France expressed a desire to see the Cowan, and was beginning to feel, from the reports he had seen, that it must be quite an advantage over most of the non-reversing kind. Another year they will give one a test.

In another room in the same building was a large and fine collection of stuffed animals—some of them exceedingly rare—most of them of the junior France's preparation, and a few that E. France himself had prepared. Both of the Frances are expert hunters, and occasionally take an outing.

CHAT ON EUROPEAN MATTERS.—NO. 3.

By Charles Norman.

Most of both the Swiss and French bee-keepers produce extracted honey. By the way, there is a honey-knife advertised, enabling one to uncap the two sides of a frame (of a certain size) without turning it. What do you think of that? Would it not, if really practical, be quite a splendid little implement? Well, Mr. Bertrand, being a bee-master, recommends, of course, the production of section honey, and gives in an article of his all the requisite directions how to proceed. He is not, however, in favor of our American square sections; first, because one might (in the super as well as in the shipping-case) place them wrong side up; and, second, because they do not correspond with the metric system, weighing only from 420 to 440 grams (or about 15 ounces) which latter argument can not well be refuted. He therefore invented and recommends what he named the "French section," which is longer than deep, measuring 130 by 105 by 50 millimeters (or about $5\frac{13}{100}$ by $4\frac{1}{8}$ by nearly 2 inches thick), weighing 500 grams, or about 18 ounces. It can be adapted to all kinds of hives.

Mr. C. P. Dadant, in the *American Bee Journal*, published two articles in which he spoke against the use of sulphuric acid for rendering wax. Mr. Bertrand has translated and reprinted both of them.

Naphthaline is asserted to be a preventive of bee-stings. A correspondent says positively that bees, when going for his "naphthalined" hands, always desist from their aim.

Concerning "laying workers," Mr. Gillet, a teacher of apiculture, has observed that, when a colony of laying workers is dumped or brushed on to the ground at some distance from their hive, the laying workers do not return, but stay

in a lump on the ground. He tried, and succeeded in two ways in getting rid of "those devils of fertile workers." The first is a little more tedious. He took two frames of brood, of all ages, with the young bees from one of his best colonies, put them into an empty hive, and put the same into a dark place, to stay there for three days. On the evening of the third day he placed this nucleus, which then had five queen-cells, on the stand of the laying workers, which, in turn, were carried to the cellar. Some days afterward it was taken out again and placed at some distance from the nucleus, and the bees were brushed on to the grass. Most of them, excepting, perhaps, a thousand or more, returned to their old stand, where now and then some bees were killed, "but this was all." Those bees which remained on the grass were mercilessly destroyed. A month later he opened the hive and found a "magnificent" queen (reared in a two-frame nucleus).

The second way is less complicated. One evening he gave the same scent to the colony with the laying workers and to the weakest of his other colonies, on account of fighting. On the following day he moved the colony with the laying workers about 350 feet from their old stand, on which he set the scented weak colony, and brushed the bees off on the ground. Nearly all went back to the old stand, and there was no fighting. About 300 or 400 bees remained on the ground and were killed. Eight days after, he opened the hive and every thing was normal.

In speaking of the preservation of drones for late queen-rearing, Mr. A. I. Root, in his A B C book, says: "I believe drones have been, under such circumstances, wintered over." Well, one Mr. Cèdre, relates that, after sufficient rains toward the 15th of October, the queens not only laid pretty well, but that drones had been reared, and says: "These drones, in small quantity, to be sure, have wintered over in two or three hives, and died after some flights in March. This is the first time I have observed this fact."

St. Petersburg, Fla.

DRONES, DRONE-LAYING QUEENS, AND LAYING WORKERS, USELESS.

AN INTERESTING EXPERIMENT.

By Willie Atchley.

If I remember aright, I promised the readers of GLEANINGS that I would test the value of drones from drone-laying queens and those from laying workers and unfertile queens. Now, I must recall the promise that I would try this on an island 18 miles out at sea this year, and report. As the experiment would cost me in cash $50, not counting time, I had to postpone the scheme till some future time. As the hot July wind very nearly ruined our nuclei, we had to use all the means we had to restock our queen-rearing business, and had no money to spare for the proposed experiment. But as we have places here on the prairie where we can get five or more miles away from bees, timber, or anybody, we tried the experiment in a small way. While this could not be taken conclusively, I am now fully convinced that I do not want any of my queens mated with any but drones from best fertilized queens. We are satisfied that nearly all, if not all, the queens put on the prairie were mated with the drones from laying workers; and while they seem to be just as prolific as any queens, they are ruined by being mated with these undeveloped drones. What I mean by undeveloped drones is this: drones from any but good fertilized and laying queens, as we all know that a queen is not thoroughly developed till she is mated and begins to lay. Then a drone from any other source is from an undeveloped mother, and is an undeveloped drone.

Now, our experiment queens would mate and lay as well as any queens, so far as we could see, in worker-cells, and nearly all the eggs would produce drones. My idea is, that the mating of these queens by such drones was so feeble that not one egg in twenty would touch the fluid and be transformed from a drone to a worker egg, as the fluid is so scant, and the vessel containing the same is not full enough, and the eggs pass right on by without being impregnated, and all caused from improper mating.

I am now of the opinion that weakness, either in the queen or drone, will cause a defect in the mating, and a drone-laying queen will be the result. I believe that a queen can be fertilized by an undeveloped drone, and yet no worker eggs be laid, as the fluid deposited by the drone is so small that the duct that conveys the eggs is not touched at all by the fluid from the drone, just the same as an egg deposited in a drone-cell for a drone; still, nature may be satisfied to such an extent that the queen may think she is depositing worker eggs. I have now come to the conclusion that I shall never allow any but drones from my best queens to fly near my queen-yards, for I believe it will sooner or later prove very damaging. I am perfectly satisfied that the queen has the power to deposit eggs without having them come in contact with the semen, or fluid deposited by the drone, and *all* such produce drones.

I should be glad indeed to have some of the old heads take this thing in hand, say Doolittle or Prof. Cook, and see if I am not right. I do believe that we as bee-keepers are standing in our own light, and sleeping over our rights, not to have this thing put through and settled beyond a doubt, as poor mating is *always* a loss to the bee-keeper. We had arranged to have some of these drone-laying queens dissected and thoroughly examined by Dr. Howard, at

Dallas, during the fair; but professional duties kept him, and nothing was done.

Now, who will volunteer to take up this matter with me next season? and how many would be willing to throw in a dollar to have this all tried 18 miles out in the ocean, so that answers to such puzzling questions could be answered beyond a doubt?

Beeville, Tex.

[Here is $5.00 from GLEANINGS.—ED.]

SOME KINDLY HINTS TO YOUNG WOMEN.

ESPECIALLY THOSE WHO ARE AMBITIOUS TO LEAVE THE COUNTRY AND FIND A PLACE IN THE CITY.

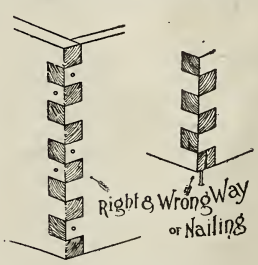
By Mrs. N. L. Stow.

Mr. Root:—I was very much interested in Rev. W. T. Elsing's letter in Nov. 1st GLEANINGS, particularly as I know his sister, who is a resident of this city, and who, years ago, was for awhile a member of my own family. I am sure he is well fitted to lend a helping hand, and give an encouraging word, to all who are struggling for better things. I would take his last paragraph, and, with a slight change, would say, "My advice to all young women is, to let well enough alone. If you have a rich uncle or good friend who will give you assistance, well and good; if not, stay at home and learn to take care of bees," if you have not something better. I do wish I could impress the truth on the hearts of all young girls, of the fearful risk they run in coming to a great city, alone and unprotected. It is pitiful. It is wicked to allow it; and yet they are coming every day. I am acquainted with the workings of that helping hand in Chicago that is watching for and taking hold of such if possible, and starting them right, or looking for them and pulling them out of the mire, if they have fallen, and setting them on their feet again, or sending them back to the home they never should have so ignorantly left. It is called the Anchorage Mission, and a wonderful work it is doing. Near my own home there is an institution for the rescue of homeless and helpless girls—the Illinois Industrial School for Girls. My husband has conducted a Sunday-school for them for over fourteen years, so we know much of what life is for friendless girls; and, knowing it, I would plead that parents do not let their daughters go from home to earn their own living—at least, not to cities; for where one may succeed, many more wear out their lives, trying to make both ends meet, or, worse still, blindly fall into the trap of the evil one. Girls of to-day are restless and ambitious; rightly or wrongly so, as you will, women are becoming more and more independent; you can not help it any more than you can stop the march of reform in all the phases of life; but you may lead and guide them aright. If you are a bee-keeper you can get your daughters interested in your work, and have them help you, and be very sure to give them their pay or their share of the profits, the same as you would any one else. Let them have periodicals, and encourage their little ambitions, and you will, together with them, be lifted up into something better. Surely farmers who are spending their lives trying to make something grow should see to it that their own lives, and those of their families be not dwarfed.

How many parents fail to pluck the fruits of peace and joy from their family life because they have neglected to prune and train and develop the growing minds given into their charge! Surely life is more than living, and he who lives the larger life lives most.

Evanston, Ill., Nov. 30.

Friend Ernest:—In your illustration of Dec. 1, page 908, providing, as I think is the case, the tenons are square, or nearly so, I can't see why the lowest nail in the "right way" wouldn't split the wood just as quickly as the nail in the "wrong way." You surely will admit that the nail in the wrong way will hold far better. As you may have guessed, I made those hives, and I can't think they are so awful bad.



Chicago, Ill., Dec. 5. C. C. MILLER, JR.

The following is the reply:

Reverting to the cut on page 908 of GLEANINGS, of the right and wrong way of nailing, I would say that the lowest nail of the former should not have shown. The cut as now reproduced is as it should be. You will readily see that the other nails put in the "right way" can not split, because each tenon is held on each side by its neighbors. No. I can not quite admit that the nails put in the "wrong way would hold far better," for the very reason that the two boards are not held together by the drawing power of the nails. All nails, especially cut nails, and cement-coated wire nails, such as we use, have considerable drawing power, as you may know, and the strength of the corner depends largely upon how *tightly* the tenons are drawn into their places. You may drive the dovetailed corners as tightly as you can; but without the hugging power of the nails driven through the tenon into the end of

the other board, they will spring out a little. When you nail up the wrong way, the drawing power is the wrong way; or, at least, it does not restore the tenons to the tight contact that existed under the blows of the hammer while the dovetails were being pounded together.

Perhaps I can not explain to you theoretically why there is a difference; but there is a difference in practice, for we have tried both ways in our shop. While I do not wish at all to criticise your nailing, I observed that, where the nails were put through as they should be at the center of the boards, they drew the board up tight at that point; but near the outside edges there was a slight gap on nearly all that I examined, and now and then a split tenon.

I see now that I did not make myself entirely clear, and did not emphasize the most important feature; namely, the drawing power when the nails are put in the "right way."—ED.]

RAISING QUEENS.

Question.—I attempted twice to raise queens over zinc excluders, according to your book, tiering up until queen-cells were started to get royal jelly, which was put into cell-cups, and larvæ transferred into these; but the bees refused to accept them. In looking a day or two afterward I found in both cases that the bees had removed the larvæ and royal jelly, and had slightly rounded the edges of the cell-cups. Every thing was done according to directions to the best of my ability. Where does the fault lie—with me or the bees?

Answer.—It is a singular fact that about one out of every fifty who try the plan of rearing queens as given in my book make an entire failure of it. Of the other 49 who try, forty report a perfect success, while the other nine are puzzled and perplexed over their not being able to do better than to secure from one to three perfect queens out of every lot of cell-cups tried. But while this is so, there is one thing worth mentioning, which is, that the longer those who have poor success try the plan the better they succeed. If I am correct, the editor of GLEANINGS had poor success when he first tried to raise queens this way, but afterward made a success of it. From the above I am compelled to say that the fault, when a failure occurs, must be in the operator, for, so far as I am aware, bees behave very much the same, whether it be in York State, Pennsylvania, Florida, Texas, California, Canada, Europe, or Australia, as I have reports of perfect success and also of failures from all the places mentioned, and from many others also. If any man or woman makes a perfect success of the plan in Pennsylvania (where the asker of the question resides), should not another make the same success providing he did *exactly* the same thing? As forty out of fifty do make a perfect success with the plan, it would look as if those who make a partial or entire failure in the matter failed in some respect to work in all the minutiæ of the matter in the same way the successful ones do. As I mistrust that more fail in the matter of the transferring of the larvæ than anywhere else, I am constrained to give the fullest possible directions in this matter. To those who have not succeeded I would say, wait about trying again till swarming-time, then take some of the queen-cells which the bees have prepared, from the hive, taking such as have plenty of royal jelly in them; and, after having removed the larvæ occupying these cells from the royal jelly, transfer larvæ from your select breeding queen to the royal jelly left just as you removed the original larvæ from it. Three days previous to this prepare a colony by removing its queen, and at the time you transfer the larvæ take all of the brood from it, giving it or allowing it to have three or four frames of honey or combs two-thirds or more filled with honey, as given in one of the earlier chapters of my book. Now place these cells on a stick by dipping the bases in melted wax, or stick them on the sides of the combs already in the hive, *a la* Willie Atchley, when you will place them in this queenless and broodless colony for perfecting. If this is a success you may know that there is no trouble on your part in the transferring process; but should it not prove successful you may rest assured that you killed the larvæ in some way in manipulating them; for a queenless and broodless colony, fixed as above described, will raise a queen from any eggs or larvæ which have any vitality in them. If you succeed here, try the same natural cells in the upper story of a tiered-up colony; and, if I am not greatly mistaken, you will succeed here also, unless you try in early spring or late at fall, which you can not well do if you take cells from swarming colonies. If you succeed with these swarming-cells, and can not with the cell-cups, then you may know that there is some mistake in your manipulation of the royal jelly, or else the wax used in forming the cell-cups is offensive to the bees, or not fashioned as it should be in some way. To find out which of these is the cause of failure, instead of using royal jelly, transfer the larvæ to the cell-cups by the Willie Atchley plan of removing cocoon, larvæ, and all, to the cell-cups. If you now succeed you may know that the trouble was in manipulating the jelly. If you do not then, the cell-cups are at fault. If you have made no success with any of your trials till you transferred the larvæ by means of the cocoons, then you may know that you handled the larvæ in transferring in such a way that you killed the same, and here is where you are to look for the trouble. If you think that you failed in handling the larvæ, allow me a few suggestions.

Make the point of the quill used in transfer-

ring very thin and quite broad; then give the point much curve, so it will fit the bottom of the cells nicely. Now, before trying to transfer the first larva, dip the point in royal jelly till it is thoroughly moistened with the same, when you will note that, as you pass it under the larva, said larva is floated up on this royal jelly adhering to the curved point of the quill, so that it does not touch the quill at all, so can not be injured if you use any care in setting it down in the royal jelly in the cell-cups. If you are bothered about seeing, shave the piece of comb containing the larva down almost to the septum of the comb, or base of the cells, when no one should have any difficulty in seeing perfectly who can read the print of these pages.

But perhaps you tried the plan of queen-rearing too early in the spring, or during cool weather in September or October. Or perhaps you did not feed the colony when honey was not coming in from the fields, or did not have unsealed brood in the upper story; any or all of which would tend toward a failure. If the weather is cool, and no honey coming in from the field, the bees should be fed till they are all alive and active, the same as they are when honey is coming in from the fields and at swarming time; for if we would raise good queens at any time of year these conditions should be brought about as nearly as possible.

Heads of Grain, FROM DIFFERENT FIELDS.

PINE TAR FOR FEEDERS.

If Dr. Miller will take pine tar, and work in air-slaked lime, to the consistency of putty, he will find the article he asks for in "Straws," Oct. 15. As it hardens quickly it is best to mix but a small quantity at a time. For cracks in hives, leaky pails, or other articles, it is easily applied, and durable. For hive-covers of canvas, take pine tar, mixed with ocher into a soft putty; let it stand 24 hours, and thin with linseed oil to the proper consistency. After tacking the canvas around the edges of the cover, wet it thoroughly; and after the surplus water has run off, give it a good coat of the paint, which can be repeated, if necessary, with lead, if the color is objectional.

New Smyrna, Fla. JNO. Y. DETWILER.

LIST OF SUBSCRIBERS ON THE WHEEL-ROUTE.

I have recently received some back numbers of GLEANINGS, from home. I would suggest to Uncle Amos to put a list of his delinquent subscribers in his pocket when he is out on his wheel. He probably passed 602 South Metcalf ("Wapak" road) the evening he was wanting information regarding those "vast reservoirs of oil." have been making 'em for the last nine years, and guess I could have told him "sumpin"—a' done it too—probably got permission to show him around our $2,000,000 refinery and paraffine works; Chicago pump-station, with its pumps that have pushed an eight-inch line of water from Lima to Chicago, 210 miles; gas service, etc., sufficient to take all the time he had to spare. J. K. MCCLURG.

Oil Centre, O., Nov. 26.

[My good friend M., it is not only *delinquent* subscribers, but subscribers of any sort, of whom I ought to have a list when I go out wheeling. I have resolved many times that I would carry one the next time; but it is not every reader of GLEANINGS who is such a devoted friend to A. I. R. as yourself and friend Matteson, of Kreidersville. Another thing, I almost always go off into regions where I did not expect to go. If I had a list of the whole State of Ohio, then I could hit them. But to get down to business, I am exceedingly obliged to you for your kind offer of services; and when we have good roads once more I am going to make a second trip for further investigations. Many thanks. A good many times, after I get home, I feel ashamed of myself to think I have been so near some old veteran and did not know it.—A. I. R.]

LEARNING TO RIDE A BICYCLE.

Seeing you are a great amateur bicyclist, could you not publish instructions for beginners? We are a family of eight, and we are all trying to learn. X. PICQUET.

Sainte Marie, Ill., Sept. 28.

[My good friends, as I learned mainly after I was over 50 years old, and made pretty hard work of it at that, at least on the start, very likely my suggestions may be of some avail. Perhaps the most important thing is to find a good place. You want level ground, tramped hard and smooth. There is no better roadway for a wheel than ground that is tramped hard and firm and smooth by many feet. Then the place should be wide enough—no stumps, trees, nor any thing to hurt you, on either side. It takes lots of room for a beginner. Lastly, the ground should be a little down hill, so the beginner will not need to exert much strength to start with. If there is plenty of grass pretty tall, each side of the path, all the better. Take the wheel to the top of the slope; hold by the handles; put your foot on the step, and ride down hill. After you have done that a few times, get on the saddle and learn to guide the wheel. After you can ride from the top of the slope to the bottom, sitting in the saddle, you can soon get your feet on the pedals. You will then need no further instruction from any one. At about this stage, however, you will want a long piece of nice level road before you, and there should be a similar place (down slope) a little distance away, where you can get on to start back to the place of starting. The best place we have around Medina is on the race-track at the fairgrounds. In this case the beginner comes around to the place of starting, and so does not get away off from his companions or his home. While in Missouri my nephew learned to ride fairly well in about two hours. The ground was very hard and smooth in their dooryard. After he had got to going, he practiced by running around the house. I think he could have ridden a mile without getting off, within two or three hours after he first tried to ride a wheel; and he had less instruction than I have given you in the above. Perhaps I may

add that he is an expert in horsemanship, and is just 21 years old. If you are over 50 it will take you longer, and you must not be discouraged if you find a few bruises when you undress to go to bed at night.

Success and best wishes to that family of eight, friend P.—A. I. R.]

MR. ALLEY says, "Give the bees a chance to rest all winter. Do not disturb them at all." This is good advice, providing you know they have been fed and have sufficient stores.

THIS seems to be a rather open winter all over the country, and it behooves every bee-keeper to see that his bees do not starve. While cold winters are severe on outdoor unprotected colonies, the bees are not as liable to rear brood or use up their stores. But during open seasons like this the very opposite is true, and colonies are lost, not by cold, but by starvation. *Later.*—Since writing this, the weather has changed to almost a blizzard this morning of the 27th.

I EXTRACT the following from the *Nebraska Queen*, a new bee-paper. It is a pretty good sample of the rest of the editorial matter:

I fear there are many swarms of bees in Nebraska that will have to be fed or they will starve before you can feed in the spring I have heard many, of late, say their bees may starve before they will spend any more money on them. Ah, my friend! how can you talk that way? Show me what has paid the past few years that has been left to its own ways. Gentlemen, your stock would perish and die this winter if you had not economized and saved all your straw, hay, and cornstalks. Many are, to-day, wondering how their stock will get through the winter. It will be through your careful care for it.

THE following are a few brief pointers in regard to advertising, that I take from *Printers' Ink*. This is getting to be the season for advertising, and I feel sure that our advertisers, or those who expect to be with us, will profit by the suggestions. Notice particularly the last paragraph You will see how nicely it dovetails in the editorial on page 876. It is far better to invest what money you have, in a number of small advertisements, than to put it into one big flaming one and let it stop there.

Advertising is like a carriage—its progress is impeded by getting into ruts.

A great many persons will read a short story who have not time to read a long one. Same way with an ad.

Different persons read the same thing in a different manner; hence the necessity of presenting the same subject in different ways to convince different minds.

Nails driven but half way do not fulfill an intent. Half-hearted blows in advertising are as futile. Concentrated applications alone create impressions.

Merchants should bear in mind that "selling goods below cost" is unprofitable in more ways than one. Most people think you're lying, and trade elsewhere; while those who believe you, will stay away because they don't like to trade with a fool.

A dentist could probably drive home the filling in a tooth with a single blow from a large hammer; but he does a better job, and the job lasts longer, by using a small hammer and repeating the blows. The same principle holds good in advertising.

THE CROSSES OF 5-BANDERS CROSS, BUT WELL MARKED.

THERE is one objection to the five-banded Italians that I had not thought to mention before; namely, that a cross between a queen of five-banded stock and a black drone, or a five-banded drone and a black queen, will, according to our experience, result in all of the bees showing at least three bands, and in some cases four. Now, these bees, so far as *markings* are concerned, would pass for pure Italians, because, forsooth, they show three yellow bands and more; but they are, just the same, hybrids; and this accounts for the way some of the bees of five-banded stock are so "awful" cross. They are not pure; the owner says, "They show four bands, but sting like hornets."

I do not wish to appear to discourage the business of breeding five-banders; for there are some careful breeders who run for both color and business; but the color craze has been carried so far by many of the breeders, all other qualities sink into insignificance when compared with the one thing—"lots of yellow." Color will not make prolific queens, neither will it add any thing to the honey crop. On the contrary, it will detract from both.

THE SHOW OF HANDS ON THE BEE-PARALYSIS QUESTION.

THE following is the revised list of names of queen-breeders up to date who have signified their willingness to destroy the first case of bee-paralysis as soon as it appears in their yards, within 24 hours after its discovery. I am well aware that some think such a procedure unnecessary; but it will surely stamp the disease out entirely, if all queen-breeders will take pains to pursue this policy for a few years. Foul brood, I feel quite certain, can not be transmitted from the ovaries of the queen, Cheshire to the contrary; and I think all practical apiarists, and those who do not depend upon fine-spun theories, agree with me. But bee-paralysis, assuredly, can be so transmitted, and should be treated accordingly.

W. H. Laws, Lavaca, Ark.
J. P. Moore, Morgan, Ky.
J. J. Hardy, Lavonia, Ga.
F. A. Lockhart, Lake George, N. Y.
F. B Yockey, North Washington, Pa.
H. G. Quirin, Bellevue, Ohio.
Cleveland Bros., Stamper, Miss.
G. W. Hufstedler, Clarksville, Tenn.
Leininger Bros., Ft. Jennings, O.
Jennie Atchley, Beeville, Tex.

By the way, I notice by the *Apiculturist* that Mr. Alley thinks the course we are pursuing in

this matter is foolish, and that a better way, and all that is necessary, is to simply destroy the *bees*. He holds that "the brood, honey, and combs are not diseased."

But over against this we have the testimony of Mr. T. S. Ford and others who have experimented pretty carefully, showing that the disease is carried through the combs, or the hives, for he experimented on this very point. I grant mild measures may work very satisfactorily in the North, or in any climate like that of Mr. Alley's. We do not fear the disease north of Mason and Dixon's line. The probable consequence of its being transmitted through queens from the *north* when sent *south* is what we do fear.

WHEN some one else says something that we agree with, we are pretty apt to say, "That's good." Well, here is something from the last *American Bee Journal* that I think is "good:"

Come to think of it, I too must take exception to the *American Bee Journal* editor regarding his conclusion concerning the editorial "we" and the individual "I"—and the more concur with Bro. Ernest Root's preference. Why? Well, I'll tell you. The "I" gives all statements a more decided, independent, and responsible force; it admits of no equivocation; it courts no excuse; it holds itself personally amenable for the utterance; it practically affirms that he is the writer—"If you have any objections to urge, I am ready to afford you satisfaction!"

Now, it is not so with the usual "we." Not only does it fail to be commendably modest, but it lacks individuality and manly grit! It nebulously suggests that others are implicated in the assertions made; it is only another way of expressing the irresponsible "they say," which phrase may or may not include half the inhabitants of a given place—a weak, cowardly intimation, too frequently protected. Of all things to me most admirable is the exhibition of manly courage of one's convictions, of placing one's self firmly, honestly, and independently before the public, ready to maintain the principles he believes to be right; courting criticism from whatsoever source, and I know of no more unflinching vowel for the purpose than a respectful "I". EMM DEE.

HOW TO FEED IN MID-WINTER.

QUITE a number have asked how to feed their bees during mid-winter. I assume, of course, that your colonies have been neglected for some cause or other, and you now discover that they have hardly sufficient stores to carry them to spring, let alone that season, the most trying of all. In the first place, it is always better to feed in the usual manner in the fall; but when that has not been attended to, something else will have to be done now, for in this case surely the motto holds true, "Better late than never."

The best thing to give the bees is combs of sealed honey. The dry ones should be taken out and the filled ones put in their places. It might be advisable to leave one empty comb in the center, with two or more combs of filled stores on either side. But we will suppose that you have not the combs. Cakes of maple syrup answer very well when laid over the tops of the frames under the quilt. But you have not these. Cakes of dry candy should then be used. The following are the directions given in our A B C of Bee Culture:

Into a tin sauce-pan put some granulated sugar with a little water—a very little water will do. Make it boil, and stir it: and when it is done enough to "grain" when stirred in a saucer, take it quickly from the stove. While it is "cooking," do not let the fire touch the pan, but place the pan on the stove, and there will be no danger of its burning. Cover the dining-table with some newspapers, that you may have no troublesome daubs to clean up.

To see when it is just right you can try dropping some on a saucer; and while you are at work, be sure to remember the little folks, who will doubtless take quite an interest in the proceedings, especially the baby. You can stir some until it is very white indeed for her; this will do very well for cream candy. We have formerly made our bee-candy hard and clear; but in this shape it is very apt to be sticky, unless we endanger having it burned, whereas if it is stirred we can have dry hard candy, of what would be only wax if cooled suddenly without stirring. Besides we have much more moisture in the stirred sugar candy, and we want all the moisture we can possibly have, consistent with ease in handling.

If your candy is burned, no amount of boiling will make it hard, and your best way is to use it for cooking, or feed the bees in summer weather. Burnt sugar is death to them, if fed in cold weather. You can tell when it is burned, by the smell, color, and taste. If you do not boil it enough, it will be soft and sticky in warm weather, and will be liable to drip when stored away. Perhaps you had better try a pound or two at first, while you "get your hand in." Our first experiment was with 50 lbs.; it all got "scorched" "somehow."

But suppose you do not wish to bother with the candy-making. Stick candy, or any kind of candy that is not colored or adulterated, that is made from pure white sugar that is hard, would answer. The only trouble would be, it would be rather expensive compared with what you could make yourself. "Good" candy—that is, powdered sugar and honey mixed into a stiff dough, may be used; but the only objection to it is, the bees suck out the honey and let the dry grains of sugar rattle down between the combs; then there is danger of its "running" and making a dauby mess.

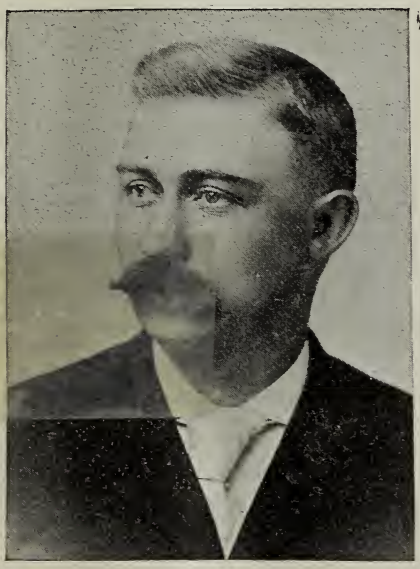
JOHN THORNE CALVERT.

SINCE the Home of the Honey-bees has become an incorporated company, I have thought that many of our readers would like to be introduced to our secretary and treasurer, Mr. J. T. Calvert, who, although he transacts a very considerable part of the business, is not generally known to our readers, though very many of them have read letters from here dictated by him.

Mr. Calvert was born Dec. 7, 1862, in Victoria Co., Ontario. His grandparents on both sides came from old England. He was raised on a farm at Reaboro, his old home, and educated at a country school about two miles distant; and numerous were the times when paths had to be cut through the snow across the fields. This was a good school, and Mr. Calvert made the best possible use of the privileges afforded him. Indeed, if there is any thing that will clear up a youth's head, and make him do the best work, it is to walk two miles to and fro from school.

He was soon proficient enough to pass the examination for what is known in Canada as the third-class teachers' certificate; and this means a good deal more than the ordinary certificate, so called, in this country. Later on he took a course in the Ontario Business College at Belleville, doing the work of a sixteen-weeks' course in eleven. After this he spent six weeks in Toronto in a wholesale house; and from there he came to Medina in 1881.

The year before, at home, he had become interested in bees. He obtained some queens of W. G. Russell, now of Millbrook, Can., and at about the same time a few stray copies of GLEANINGS fell into his hands. As a result of this a correspondence began, resulting in Mr. Calvert's coming here to work.



JOHN THORNE CALVERT.

We had previously (as we do now) received a great many applications from outside parties; and as a general thing we had told all of them that it was no use for them to apply so long as so many applicants were living at Medina. But there was *something* in John's letter that impressed A. I. R. with the fact that he was a boy of the "right sort" of stamp, stamina, and character, and so he was induced to break over his custom.

John was willing to work for small pay, that he might have the privilege of learning the business; after which he expected to go back to Canada to establish a supply-house with his brother Albert, who was then living. But John developed such a proficiency at the Home of the Honey-bees, and seemed to fit so well in the harness, that several things conspired to change his plans.

He first began work in what we call the sample-room, "tying up sticks." The following summer he took charge of the apiary while the writer was at school in Oberlin. We had a heavy queen and bee trade that year, and so our new man was pretty well initiated.

In order that he might make himself more useful he decided to take a course of studies at Oberlin, working his way along, and paying his own expenses as he could. He therefore attended school at this institution, with the writer, off and on, for four years, when ill health on the part of A. I. Root, brought on by the heavy responsibilities of the rapidly growing business, made it necessary for one of "the boys" to come home—at least for a time. I came first and began on the journal in the summer of 1885, doing what I could to lift the load here; and during the following spring John came, and in his turn began to lift the burden in the commercial department. I have said that several things conspired to change his plans. I don't know which was the most potent in inducing him to become an American citizen. I need not go into details, but in September of 1886, shortly after leaving school, he married my oldest sister, Maude.

A naturally good memory for figures and names, his general aptitute for business, that seemed to be born in him, enabled him to be a proficient clerk. First he took charge of the estimates and of the buying of the goods; and later on he assumed, practically, control of the whole commercial department, including bookkeeping, buying and selling, etc. Under his management branch houses were established, and other depots for the sale of our apicultural supplies were stationed all over the United States; and while we had a very good foreign trade it continued to increase, so that the business changed from what was to a large extent local and retail to what you might call transcontinental and wholesale, although the retail business and local features of it were preserved

Mr. Calvert makes a liberal use of both the phonograph and stenographer in his general correspondence; and right here I might say that nearly all letters relating to the commercial department come under his general supervision. He is an indefatigable worker; and his general good health, owing to his regular habits of eating and sleeping, enables him to do more business than most men.

He is not less active in his religious life. He has been intimately connected with nearly all phases of the Christian Endeavor movement. He has been president a number of times of our local church organization, and two years of the county, and is now president of the Medina Co. Sunday-school Union. He is also active as a Sunday-school teacher, and greatly interested in all work of missions.

Physically he is of medium height, rather stoutly built, of light complexion, and of pleasant face and manner.

The next day was Sunday, so I could not do very much in the way of investigating the queer surroundings of my relatives; but I was so full of questions, and some of them that would hardly keep over night, that I am afraid I did a little investigating, even on Sunday. We found a Congregational church, and a very bright, wide-awake Sunday-school. The pastor and the superintendent were on the lookout for strangers; and, in fact, the latter person, after the services were over, kindly took our horse by the bits and waylaid Mrs. Root and myself and our relatives. They took us over to his own house for dinner, in spite of the protests of the women-folks that their own dinner was awaiting them at home. Then they gave us the wonderful electric water to drink. I was thirsty enough, after my week of wheeling, to enjoy it to its fullest extent. Judge Wallis, our host, gave me much information in regard to Lebanon and its people. We finally got back home, and I was very anxious to attend a Sunday-school, about a mile away in the woods; but they told me it was too late, and that we should have to give it up. A few minutes later I caught a glimpse of some feminine apparel belonging to somebody who was evidently slipping away and in haste to get out of sight. They did not answer my questions very promptly and squarely; but I soon guessed that Mrs. H —by the way, when we were boys and girls together we used to call her "Mary," for short, and I think I shall call her Mary now. Well, Mary had slipped away and started off through the woods, to that Sunday-school. It seems she had the lesson-papers, etc., that they would need. The foot-path through the woods was a much nearer way than around the wagon-road. As soon as I could make a little change in my apparel I started after her in spite of protests. Just as I was disappearing down the lane, the young lady whom I met first the evening before, and whom I shall call May, called out and gave me some hasty directions in regard to the footpath through the woods. I smiled at their directions, thinking I was smart enough to catch up with any *woman* on foot before she could get out of sight. Well, I shall have to acknowledge that a *Missouri* woman was a little too much for me. Had I not listened to May's directions I might have been wandering in the wilderness up to this time for aught I know. I finally caught a glimpse of Mary just before we came out into the clearing. The schoolhouse is in the center of a circular spot right in the widerness, and the dwarf-oaks are so dense that one looks around the circle in vain to find the way out. Judge Wallis and the minister were there before me, with a double buggy, and I laughingly asked them where in the world they got inside. The judge said he could hardly tell; but when they went home they were going to drive clear around the outside until they should come to a vacancy in the trees where they could squeeze through.

The country schoolhouse was pretty well packed with people. Mary did not know that the minister and the judge would be present, and so she felt anxious about having somebody on hand to look after the young people in case the regular leaders did not appear. The most of the gathering consisted of boys and girls, such as you might find in any neighborhood. As the pastor from town was present, we had a short preaching service after the lesson. The discourse was taken from the forest-leaves that had just been nicely decorated by the first frost o autumn.

In almost every country neighborhood, especially where they are a little off from town, the boys and girls are always wanting to "go somewhere," especially during a Sunday afternoon in the fall of the year. Now, can any better place be devised than a Sunday-school in the schoolhouse, with a good sober spiritual man or woman to look after the young people? I often think of that pleasant walk through the woods on our return home. Thirty years ago both Mary and myself were quite intimately acquainted. But while in our teens, neither one of us, I fear, thought very much of spiritual things. What changes time had wrought! In those days gone by, a Sunday-school in the country would have been the last thing to attract *my* attention, unless, indeed, I went to have some fun. May God forgive me, as my memory goes back to those old times, to think that once or twice my principal motive in going was, pretty nearly, only to create disturbance. It may be well for me to think of this when I feel inclined to criticise too severely some of the young people of the present day.

Monday morning I was wide awake for investigations. The view of that great spring impressed me with the idea that the locality was cavernous, like the region around Mammoth Cave; and even before breakfast I found a low place, right in front of the house, where the waters during a heavy rain went down and out of sight. There was originally a sort of cave there; but in working the road it had gradually filled up. Futhermore, in one of Rob's fields, during harvest time one of the horses broke through and went down into an underground pit, and they had to stop work and get it out. As this pit was quite a nuisance in the middle of the field, they had filled it up with trash. When I protested, Robert told me that we should find caverns before I left, without going to the trouble of digging. Judge Wallis told me that, in drilling for that beautiful water in Lebanon, the drill several times passed through cavities, and they were obliged to tube the well through these to prevent losing the water.

Right here perhaps I may say a word in regard to the wonderful "electric water," as they term it. In the first place, if you hold a knife-blade in the stream of water as it comes out of the iron tube it will become magnetized, showing the wonderful electric properties of the water. Secondly, when this water is used for making steam, if you hold your hand in the jet of steam as it issues from a pipe, electric lights or stars will be seen on the ends of your fingers. These facts are vouchsafed for by the judge himself, for he had seen them with his own eyes. As it was Sunday, and I was his guest, I did not feel like taking him to task just then and there for the superstition; but, dear reader, let me say to you that all these stories about magnetic water are right along in line with the Electropoise swindle. The man who puts the knife-blade into the stream of water from the medical well, takes pains to draw the blade across the top of the *iron tube;* and it is this iron tube and not the water that makes the knife magnetic. Any iron tube or iron bar that has been standing awhile upright in the ground is quite sure to become magnetized. Men who drill wells are familar with this fact. In fact, iron tubes sometimes become so strongly magnetic that they will pick up a small-sized adjustable wrench. A friend once told me that the water in a glass bottle taken from a magnetic well would magnetize a

knife-blade. He had been paying a dollar a bottle for said water, for curing rheumatism. When I told h m how he had been humbugged he stopped wasting his money, and concluded t was something besides the water in the bottle that had affected his rheumatism. In regard to the sparks of electricity, if you will on any frosty night hold your hand in escaping steam from a boiler you will, if the conditions are right, see these same electrical appearances. In fact, this whole thing is mentioned in the books on electricity. But here in Lebanon they had built a great hotel, costing ever so many thousands of dollars, and put in an electric street-railway, and advertised far and near those wonderful waters of the electric well at Lebanon. Of course, visitors were shown the experiments in magnetism and electricity; and reasoning from what they saw with their own eyes they were not slow to have faith in this beautiful water with such strange properties. Some weak invalids could not stand a bath in the water, as it was so highly charged with electricity—that is, they could not until they got used to it, so it was said. Well, the proprietors of the scheme made lots of money for a time; but the hotel is now shut up and deserted. The electric-car line does not pay expenses. The water is given away to anybody who wants it. Let me say, however, that the water is remarkably pure. It is almost absolutely pure soft water, and I can readily imagine 'a people who do not have nice pure water at home may receive great benefit by going to Lebanon and drinking its pure water. I think, however, the benefit will be just as great if they would set some tin pans out during the latter part of any summer shower. Keep this water and store it up; or save the water during the atter par of a shower from any good *slate roof*. Store i in clean stone crocks, or have a real nice c stern, with some sort of pump that is not made of old wooden tubes or rusty iron machinery.

We soon made up a load and went to see one of the strange caverns scattered through the Ozark Mountains. Away out in the woods, almost on the summit of a good-sized hill, we found a great hole, perhaps 30 or 40 feet across. The inside of the hole had fallen out—or you might say with much truth the *bottom* had dropped out; and then away out under the side of the hill was an enormous cavern roofed with sloping rocks. At one side, by using care, one could climb down through the sand and gravel and broken stone. Inside there was nearly if not quite a quarter of an acre roofed over with limestone. Now, as this was on high land, and inside a good-sized hill at that, and during the most excessive drouth, almost, that Missouri has ever known, I hardly expected to find water; but, sure, enough, we soon heard water dropping. It was dripping from the roof in different places. I soon satisfied *myself*, however, that this water did not come from water in the ground or in the rocks. It was produced by condensation. The day was quite hot and sultry outside. Well, this hot sultry air, coming in by circulation, as it struck the comparatively cold stones deposited its moisture, like dew on the side of a cold pitcher. When the drops were sufficiently large they ran together and trickled down to the lower portions of the roof of the cavern. Here they dropped off. By setting a tin cup in the right place, one could, in a little while, get a drink of pure soft water. In former times people had placed tubs (and we saw the remains of these) in order to catch this beautiful "spring water."

A few days after, we visited what is called Saltpeter Cave on the banks of the Gasconade River. There are acres of underground caverns here in the cliffs beside the river. Stalactites and stalagmites are so plentiful that the dooryards all over Laclede Co. are decorated with them. Everybody who goes to the cave takes an ax and a lumber-wagon, and breaks off the icicles, some of them nearly a foot in diameter, and takes them home to place among the flower-beds in the front yard or beside the doorstep. Now, my impression is, although I have never seen the matter mentioned in works on geology, that these stalactites, etc., are formed principally by the condensation of the moisture in the atmosphere, especially during our hot summers. These cliffs are so honeycombed with caverns that warm air from the outside is continually rushing through in currents depositing its moisture on the rocky ceiling overhead, and then going back to be warmed up and charged with moisture again. Here in Saltpeter Cave, as it is called, the whole operation can be seen going on all the time. The icicles, as you might call them, are soft, and many of them feel quite greasy. The drop of water on the end is thick with minerals, sometimes almost like molasses. The currents of cold air rushing through take up the moisture, and the mineral accumulates. The strange part of it is, that, although the icicles are so soft and pasty on the tips where they are forming, and on the outsides, they are, in the center, a flinty rock. Some of the rooms in this cave are very beautiful. There are figures, and shrines and pulpits and gardens, and, in fact, one can imagine almost any thing wrought out in Nature's laboratory; and in this cave, at least, Dame Nature builds pretty fast. My friends told me that, even in a few years, great changes have been going on. I should not be surprised if these icicles grew an inch a month, or a foot a year.

There hadn't been rain for months. In fact, farmers were seen at all hours of the day, and on almost every road, driving their stock to the springs or to the larger pond-holes where the water was not yet exhausted. By the way, in some places in Missouri the only water they have to *drink* during such a season of drouth comes from these pond-holes dug in the ground. Now, in such cases is it any wonder that great cures should result by going to some celebrated spring, and putting up at an expensive hotel? Of course, the people were longing for rain. It came on the second Sunday of our visit, in the afternoon. We had been to church; but it was so rainy that the general conclusion was no one would be over to that Sunday-school in the woods. I decided once to stay at home, but I felt uneasy. Suppose just a few boys should gather there in spite of the rain, with no one for a teacher. I knew from experience that I could get through the path in the woods on my wheel, even if all the rest did say that the thing was impossible. The falling leaves kept the tires out of the mud; and as I had learned to dodge the bushes, and scorch when necessary, I got along pretty well. When I got out of the underbrush into the clearing, however, imagine my surprise at seeing a dozen or more saddle-horses hitched to the trees. Sure enough, the schoolhouse was almost as well filled as on the previous Sunday. Some of the women-folks had come a couple of miles in the rain. There was no superintendent, and nobody to take the lead. I finally volunteered; and if you will take my statement for it I should say we had a grand good time. I did not do *all* the talking either. The superintendent came in pretty late, but he refused to take my place. I did get him to talk, however; and one of his remarks I shall remember a long time. He said the greatest trouble with a good deal of our religion is that it is of a kind that will not

stand wetting. He said he hardly thought anybody would be there, but he finally decided to come. He was about to move out of the neighborhood, and here was a little flock of Missouri boys and girls in their teens, great stalwart young men of both brain and muscle, waiting, as it seemed to me, for somebody to form them into line. I took the liberty of selecting a nice young fellow for superintendent. He said he had only recently united with the church, and that somebody with more age and experience would do a great deal better. My friends, I do not agree with this kind of talk. A new swarm of bees will frequently work with double the vim, and gather ever so much more honey, than an old stock with double their numbers. Is not this true? Well, a new convert, even if he is not so familiar with the Bible, and does not know how things are usually done, will sometimes bring souls into the kingdom while one of the old deacons would be getting them into classes. No disrespect to the old deacons, however. They generally have enough to do if they keep bright and young in spirit, even if old in years. The boys were curious about my wheel. Some of them thought that, with the young Missouri horses they had there in the inclosure, they could throw gravel in my eyes where I had nothing but that little 22-lb. Victor. Well, may be they could. If I should ever have a chance to try a race with them I believe God would give me grace to rejoice and feel happy, even if they came out ahead.

I asked them about the state of temperance in their county-seat. Said I, "Boys, what on earth was it that brought the saloons back to Lebanon after you had once got them banished from your town?"

Nobody replied to my question just then; but quite a spell afterward a fine young fellow spoke up something like this:

"Mr. Root, you asked what it was, a while ago, that brought the saloons back to Lebanon, after we had once cleaned them out. I think I can tell you. It was the *love of money*."

There you have it, friends. That was a very short temperance speech; but I think it strikes at the root of the matter. Without *Christ Jesus* to drive *selfishness* out of the human heart, all schemes for temperance reform, or any other reform, in fact, *must* fail.

ROBBING SICK PEOPLE.

ELECTROPOISE UP TO THE PRESENT DATE.

Our readers will doubtless remember that I gave an extended *expose* of the Electropoise, in our issue for August 1, 1894, page 627. Some months before, I wrote it up with a caution, or warning, in our Medina paper, because agents were selling the bauble throughout our county, and because religious papers seemed to be its particular vehicle for advertising. Now, I want to confess to you that this matter has been on my mind a good deal. I felt greatly troubled to see our people, during these hard times, paying *$25.00* for a thing of no more value than a china nest-egg, and not a whit more scientific, let alone its power to cure the most difficult chronic disease; but I felt more troubled still to think that not a scientific paper — not a professor and not an electrician, so far as I knew, in the whole United States, had come forward to back me up. I wrote to the *Scientific American*, and its editor said that it was undoubtedly a fake, and that they had no faith in it; but they did not *print* a single word of warning. The boys in our machine-shop were studying electricity, and *they* backed me up, of course; but nobody seemed to care very much how much swindling was done in that line. I have written to our religious papers that advertise the thing, calling them to order; but they do not seem to care, so long as they get their money; and, worst of all, men and women, who ought to know better, question my *right* to criticise. They suggested it was improbable that such prominent men would give the Electropoise such a testimonial if there were not something in it. Some of my good friends mildly suggested, too, that perhaps *I* did not know *quite* every thing, and may be I was not up to the times in the way of improvements. Well, a few days ago a woman was injured by an accident near our home. Mrs. Root took her in and cared for her until she was able to ride home. Before she went away, however, she said she had an Electropoise, and that it was a wonderful help. The poor woman was not able to talk very much, and so I did not get a chance to interview her; but Mrs. Root says her statement was something as follows: Before she had the Electropoise she was obliged to take great quantities of medicine in order to be up and get around. The agent who sold the thing, however, informed her that she must chop off all medicine entirely; the 'poise would not "work" where medicines were around. "Work," indeed! Well, she discarded all medicines of every sort, and confined herself to following Electropoise directions implicitly, and, strange to tell, she was very much better right away. Did you ever! And this reminds me that I want to ask you to read T. B. Terry's talk on medicines, on the next page. But now for the triumphant *expose* of the Electropoise. The following is taken from the *Western Christian Advocate*, of New York: A. I. R.

AN ELECTRO-MEDICAL FRAUD.

"*Electricity*," a scientific journal published in New York, in its issue of November 21, prints an *expose* of the "Electropoise," an extensively advertised panacea, with certificates of its effects from men in high places. It turns out, by scientific demonstration, to be the veriest cheat, achieving its magical healing through the imagination of its patrons. It claims to cure by "thermo-electric induction"—a conceit that has no scientific basis, there being no such thing known to electricians; to so polarize the body as to attract the oxygen to its surface, and diffuse it through the system. The expert affirms that "neither magnetic nor electric polarization has any effect upon the atmosphere, except to abstract from it the dust; that, if the body were polarized to a million volts, there would be no such attraction," while this "little joker" has but "one-thousandth of a volt." The proprietor alleged that the closed cylinder contained two rare metals no chemist could analyze, while there are no metals which can not be analyzed.

Electricity purchased an "Electropoise," and had its contents examined. It was found that the nickel-plated cylinder, three inches long and one inch in diameter, was filled with flowers of sulphur and graphite made into a paste and allowed to harden, which, when used, is placed in cold water to set up by moisture a chemical action, which is so small as to be insensible and capable of exerting no influence on the system whatever. In one end of the cylinder is fastened an ordinary flexible cord, the other being affixed to the metal clasp of a garter for attaching it to the wrist or ankle. Flowers of sulphur costs two cents a pound, and graphite ten cents. The cylinders can be made, in quantity, for ten cents each; the cord, two yards in length, can be had at retail for twenty-five cents; and the garter for five cents, making the whole cost forty-two cents. The 'poise is sold for $25.

Another, a wall instrument, sold for $50, consists of a walnut board, upon which are two multiple switches, each with six points. Two flexible cards and garters are attached, and the "polarizer" is suspended and dropped into a basin of water. Two patients can be treated at one time by each attaching a garter. One of the switches regulates the current by turning the lever to the desired point. The other switch is for disinfecting germs and destroying odors, which is electrically absurd.

The proprieter professes to have a twelve-page

type-written testimonial from the Smithsonian Institute, of its being "a scientific instrument of great value," which was proven false by correspondence with the office in Washington.

The business methods of the concern, imposing it on the public, include all the accessories of the confidence and green-goods game—the stool-pigeon, the capper, the bogus purchaser, and the office boy rushing in to borrow the only "Electropoise" on hand. *Electricity* calls on the police and postal authorities to investigate the swindle and arrest the swindlers. It says: "We denominate the 'Electropoise' an outrageous humbug, with knowledge that many intelligent people have testified to wonderful cures who rest under the suspicion of self-interest." It enumerates sixty diseases it infallibly cures, and names the New York *Sun*, the *North American Review*, and eight among the many prominent religious papers giving it space and indorsement.

The *expose* is scientific and thorough, and no candid mind can escape the conclusion that the device is void of merit, and that the "Electrolibration Company" is advisedly palming off on the afflicted a worthless nothing at an exorbitant cost to the purchaser.

The cheat ranks with the electric brushes, soles, and "Perkins Tractors," exposed by Dr. Oliver Wendell Holmes.

As a psychological imposture on the infirmities of cultured minds, it is the 'cutest fake of the age. We do our readers a practical service by forefending any tempted to try this costly fraud from losing their money and execrating themselves for their credulity.

Now, friends, are you ready to give up? Is there any one among our readers who is prepared to defend Electropoise after the above *expose* thereof? I feel like saying, and I am going to say right out in print, May God be praised that we have such a scientific journal in our land as *Electricity*—one whose editors are willing to invest $25.00 for the sake of showing up fraud and humbug! yes, even though religious journals indorse it, and United States senators, or their wives, give it the strongest kind of recommendation: yes, even though so-called *college professors*, and ministers of the gospel too, have lent their influence to help it along.

T. B. TERRY ON PATENT MEDICINES, ETC.

ALSO SOMETHING IN REGARD TO THE TREATMENT OF THE DISEASES OF DOMESTIC ANIMALS.

[The following is so much in line with the teachings of our own journal, and coming from such authority as T. B. Terry and the State Veterinarian of Missouri, we copy it entire from the *Practical Farmer* of Dec. 15.—Ed.]

Before the opening hour for the Institute the other afternoon we saw a man get up on a box and collect a crowd around him, to whom he was trying to sell some so-called medicine. His audience was composed largely of farmers. Of course, he had his little game. The people were made to think that they would get their money back later on, that he was only advertising the medicine. And you ought to have seen the rush to get something for nothing. They seemed to believe that the man could pay his hotel-bills and traveling expenses, silk hat and all, just for a chance to give them something valuable. Well, they tumbled over each other in handing up their $2 each, until $60 or $70 was taken from the crowd; and, owing to a "catch" in the promise, only one or two got any thing back, of course. I saw farmers without money borrow it to give to this man for something of which the best use they could possibly make was to smash at once. Now, there was in that crowd an agent for the *Practical Farmer*, who told me he had tried in vain to get a single farmer to give him $1 for a copy for the rest of this year and during 1895. They all said times were so hard they could not afford it. This is a true picture, friends. My friend Abbott, President of the North American Bee-keepers' Association, was standing by me and watching the game. How can we reach such men? The medicine-man is making money like every thing, and we have met him this year in many forms, and more than once he has cut down our attendance.

Dr. Turner, State Veterinarian in Missouri, was asked at one Institute about hog cholera medicine, whether it did any good or not. The doctor is a fine young man, and one of my particular friends, and I was a little anxious about the stand he might take on this question. But he came out boldly and squarely. He said: "The virtue lies chiefly in the directions, which come with the medicine, which you follow. You are told to take at once all well hogs away from the sick ones and put them in a new place, and not down stream from the old place, and to leave the sick ones right there, and to burn the dead ones, and be careful about tracking any soil from the ground where the sick ones are to the other field (feed well ones first), etc., and these directions carefully followed will stop an outbreak of hog cholera very soon." The doctor was asked if filthy pens, an exclusive corn ration, etc., could cause cholera. He replied in substance that the vitality of the animals might be weakened in this way, and thus make them more ready for disease, but that cholera could start only when the hogs came in contact with the germs that produce the disease, and when they were entirely removed from them the disease would end. There is no question about the advisability of taking good care of the hogs, and feeding them properly, as a preventive measure.

Dr. Ramsey, Assistant State Veterinarian, is also an earnest, sensible, practical young man. I am afraid much of his talk would not be relished by so-called "horse-doctors." When telling farmers how to treat a horse that had the colic, for example, he said: "Go to some old lady and ask her what she would do for you if you had the colic, and treat your horse in the same way. Cover him up warmly, let him lie quietly, put cloths on the abdomen, wrung out of hot water, or put on mustard, and, perhaps, give some ginger tea." He said, in substance, that a horse with this disease is almost certain to get better soon. And when you dose him with all sorts of nauseous medicines, and take the horse out and ride him around, you are doing a cruel thing; and if the animal gets better, it is in spite of your treatment, not because of it. I suppose I enjoyed this talk more than some would, because I never did believe in dosing animals or human beings to any such extent as the common custom is. Our best doctors now give very little medicine, except to patients whose imagination it is necessary to work on, and then they often give bread pills, or some such harmless thing. In fact, there is one great doctor in the West who is performing the most wonderful cures without giving any medicine whatever. We have not a bottle of medicine in our home, and have never had the tenth part of the sickness that there was in my boyhood home, where dosing was about as common as eating.

THE DIVINING ROD, OR SWITCH, FOR FINDING WATER.

TELLING WHERE TO DIG WELLS, BY MEANS OF A WILLOW OR HAZEL SWITCH.

This is another humbug that needs to be thoroughly exposed; and such good papers as the *Country Gentleman* and *Practical Farmer* have published communications defending the institution, without any editorial or comment. Perhaps they proposed to let their correspondents discuss the matter. But I protest against letting such nonsense go unreproved, even in a single issue. The writers of both the articles in question seem to be men of sense, and should know better. Look here, friends. There are but three imponderable agents known to science—heat, light, and electricity. One writer says it is no more strange than that the magnetic needle should point toward the north pole, about 3200 miles away. That may be true; but in the first place it is *not* the north pole that attracts the magnetic needle. And, again, the magnetic

needle will not point to a lump of ore away down in the ground. If it were true, and if the willow switch or hazel rod did point to veins of water many feet below, then we should have a new imponderable agent now unknown to science. Scientific men would rush to investigate, as they would hunt for a new planet or a new comet. It is a little strange that scientific investigation has paid so little attention to this matter. One experiment station took it up some years ago. Very likely it was our Ohio station. They showed up the fraud in very short meter by demanding that the water-witch should prophesy where water could be found, with his eyes *blindfolded.* The one called was an old gentleman who had located wells almost all his life. He was unquestionably honest and sincere in the matter, for he did the work for little or nothing. When the scientific experimenters, however, asked him if he could do it just as well blindfolded he replied that he could, without question; but when placed upon trial he entirely failed to set any stake where he had previously set them when he could use his eyes. The old man was honest enough to give up, and submit that he had probably not only deluded others, but had deluded himself all his life.

Now, you need not rush forward and try to "snow me under" with your testimonials or with your faith. If any of you have got a water-witch, north, south, east, or west, who can locate wells by the twisting of a switch, and who will locate them with his eyes blindfolded just as well as with his eyes open, just let me know about it, and I will make a trip expressly to see him, and pay you all for your time and trouble besides. Will the experiment stations of the different States help to get rid of this foolish, stupid legend of the Dark Ages? Make tests as I have outlined above, then send out bulletins, and have the matter published in the agricultural papers. Why, dear friends, just consider a moment. People have carried water long distances from wells all their lives because a water-witch drove a stake in that spot; and, again, one good friend of mine, I am told, has a well right square in front of his front door, because the water-witch told him he could not get water if he dug anywhere else. Perhaps a majority of the "witches" are honest. It simply illustrates how prone is humanity to get notions and to fall into ruts. Electropoise and patent medicines, spoken of in other pages in this issue, attest this. Why, it is just really enough to make a good man weep to see how people waste money and health by letting their imagination lead them astray. As a rule, men who put down wells by machinery, and do a large business, will tell you that the witching amounts to *nothing at all.* The man who put down our well where the big windmill now stands said he always drilled wherever people directed him to, and that a great many times they had a water-witch set the stake; but he said there was no question but the whole thing was a humbug, and, furthermore, that, when the matter was submitted to him, he always directed people to have their wells where it would be most convenient, and that the chances were certainly just as favorable for striking a heavy vein of water in one place as in another. They had never failed in getting plenty of water, providing they went *deep* enough. If somebody would dig for water where the witch says it can *not* be found, he would find plenty of it, with hardly an exception; for it is about as hard to dig far into the earth *without* finding a vein of water as it is to cut a finger without finding a vein of blood. That would prove the fallacy of at least half his claims, and with that would go the other half.

SANITARY DRAINAGE, ETC.

We are told in our book, "Tile Drainage," that the roots of trees never go into the tiles unless said tiles carry water when the ground generally is lacking in moisture. This condition would be secured only where the tiles carried water from springs, or slops and sewage from the house, cellar, etc. In digging up some tiles in Ernest's lawn we found the roots of different ornamental trees had got into the tiles, and spread out, making quite bushy roots. The reason was, these tiles carried drainage from the kitchen. Now, I have for some time been thinking we might take advantage of this fact. Water-closets are fast becoming desirable fixtures, and they are especially preferable to the dry-dust system where the internal water cure is to be used. Our books and periodicals on sanitary drainage, I believe, are recommending cesspools. Now, I do not want a cesspool anywhere on my premises. We put a water-closet, about a year ago, in our bath-room. A cast-iron pipe carries the sewage outside of the building; then vitrified sewer-pipe, with cemented joints, take it several rods down into the orchard. At this point the sewer-pipe is conducted into large-sized drain-tiles. We used first eight-inch tile, increasing to ten. As the ground slopes away from the house, there is no difficulty in getting a gradual fall, and at the same time keeping these large tiles within 20 or 24 inches of the surface of the ground through the orchard. By the way, these *large* drain tiles are some damaged ones that I got at the factory for a very small sum. They are cracked and warped from being overburned. These were just the thing, you see, to let the roots of the apple-trees, or any other kind of roots that take a notion, get through inside of the tiles. A good many shook their heads, and said it would not work. But how can it fail to work? The water used in flushing scatters the solid matter the whole length of these large tiles, and dissolves more or less of it every time it goes through. During our extreme drouth there was a dense growth of grass and clover over the large tiles, especially toward the lower end, but not the faintest smell could ever be perceived—of *course not,* for the growing plants took hold of it at once and converted it into something valuable.

We have just finished to-day, Dec. 22, putting a similar one for Ernest's home down through some rows of raspberries, currants, strawberries, pie-plant, etc. See cut on page 517, 1894. You see, the whole thing is automatic. The essentials are, to find a gentle slope in some direction away from the house; then the length of the line of tiles, as well as the size, will have to depend somewhat on the size of your family. Perhaps I should have added that the ground in our orchard and under the berry-plants is thoroughly tile-drained. These large tiles for sewage run right over the tile drains, the latter constantly disposing of the surplus water. There you have it—sewage taken away without any handling, and without ever seeing it; and you also have *sub-irrigation* and *liquid manure* combined. Of course, perfectly working sewer-traps are a necessity; and experts in the matter say there should also be a standpipe just beyond the trap, to carry any surplus gases up through the roof of your building. This prevents gases of any kind from forcing their way through the trap, as we are told they some-